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Railway Age

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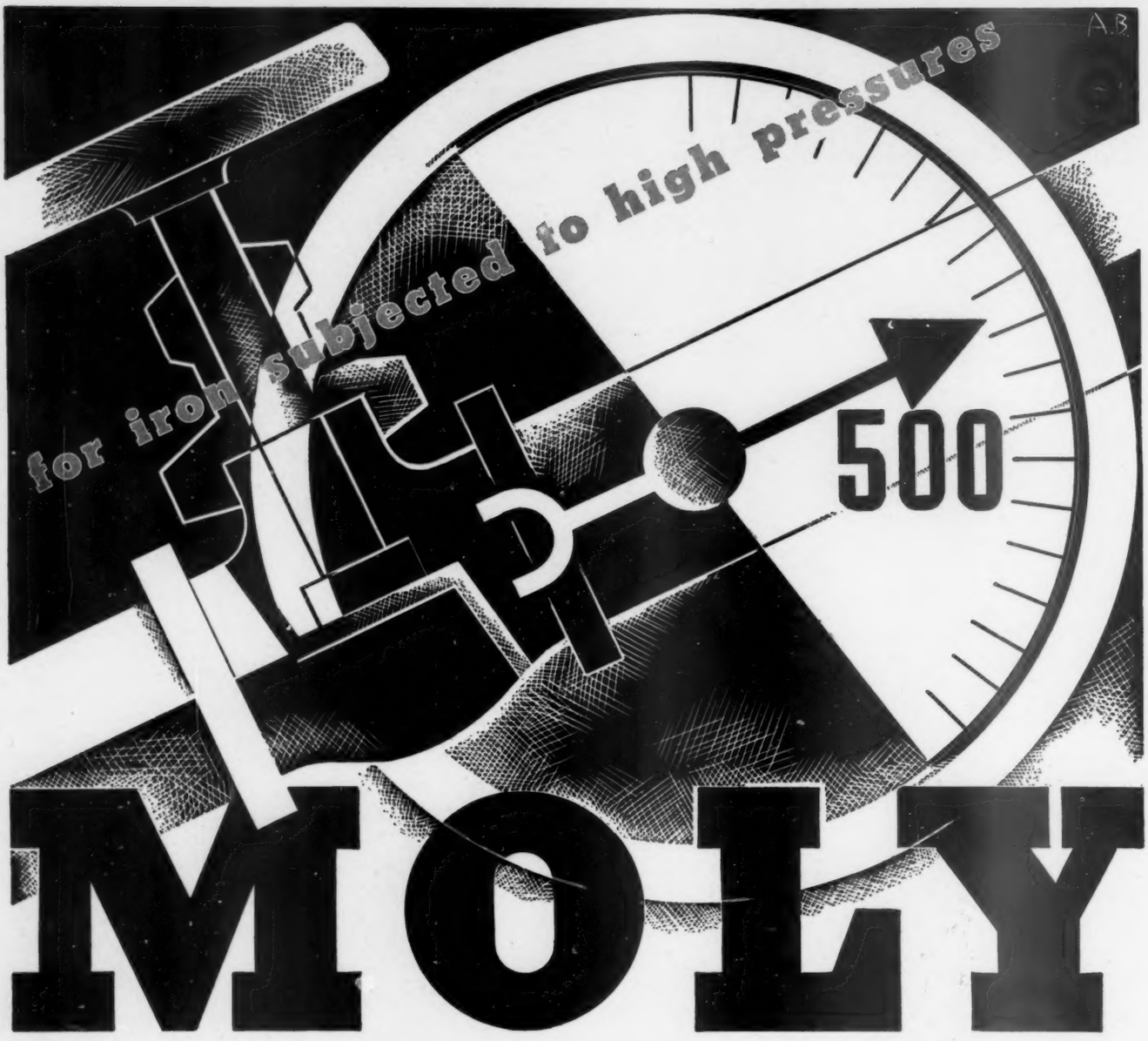

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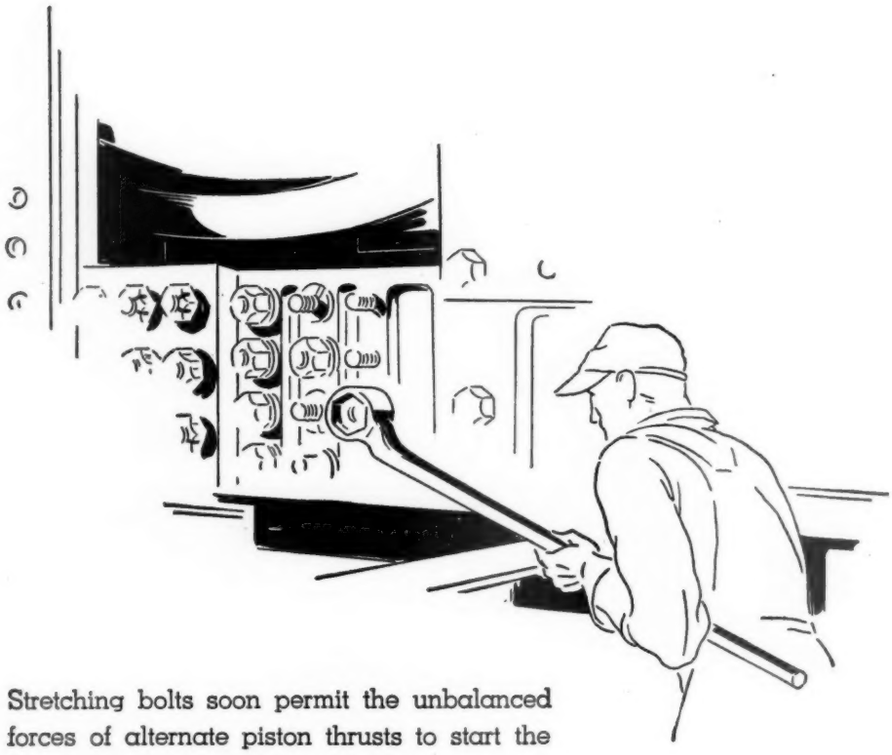
THESE BOLTS *Must* HOLD!



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RAILWAY AGE

Radical Policies and the Railways

Almost daily some development occurs which makes more clear that for some years at least there is to be waged in this country a great struggle between conservatism and radicalism, between those who favor various forms of partial or complete state socialism and those who favor maintenance of the present system intended to afford equality of economic opportunity through private ownership and management of property.

The almost universal tendency of radicalism to disregard democratic principles, as well as economic facts and probable economic consequences, in its efforts to establish "economic democracy" is strikingly illustrated by the recent adoption by the Railway Labor Executives' Association of a resolution in favor of government ownership of railways, and by the announcement of at least that part affecting railways of the new tax program to reduce individual wealth and the size of business units.

The resolution of the railway labor executives ostensibly commits to government ownership, at least the labor unions the heads of which voted for it. It was, in fact, adopted by the heads of the unions without the question whether the members of the unions favor government ownership being submitted to them in any way whatever. Have the heads of the unions authority to thus commit their organizations to any policy that their judgment, caprice or self-interest may suggest however vitally it may affect the interests of their members? Have they authority, without consulting their members, to require them to support any policy whatever that the heads of the unions decide to favor, and to discipline or expel members who refuse to support these policies? Apparently this is the case. At any rate, adoption of the resolution for government ownership, without its first being submitted to the membership of the unions, was a very significantly undemocratic action to be taken by ostensible advocates of "economic democracy."

Railway Employees and Government Ownership

The heads of the Brotherhood of Locomotive Engineers and of the Switchmen's Union opposed the resolution. Locomotive engineers are the highest paid railway employees, and doubtless recall that under government operation during the war the higher paid employees received much smaller advances in wages than the lower paid employees. Probably, therefore, they think they have more to lose than gain by the adoption of a policy of collectivism intended to substitute political influence for ability and value of service as the determinent of compensation.

But just why, at present, should railway employees as a class favor government ownership? On April 1 their wages were restored to the pre-depression basis. In April their average hourly wage was 69.5 cents, as compared with 55.4 cents in 1919 under government operation, 68.9 cents in the year 1931, 63.4 cents in April, 1933, and 62.9 cents in April, 1934. The advance of 6.6 cents an hour in the average hourly wage in April, 1935, over April, 1934, cost the railways more than $13,000,000, and this and previous advances in wages made their total pay roll in the first four months of the year almost $34,500,000 more than in the first four months of 1935, although their average number of employees was 18,285 smaller. Owing to this and other causes their net operating income declined $23,300,000 in the first four months of the year, and as a whole they failed to earn their fixed charges.

The average income of all persons gainfully employed in the United States at present is about $1,125 annually. The average earnings of railway employees in April were $138.47, or at the annual rate of $1,662. Why should they favor government ownership when, under the present system, their average income, exclusive of any return they may receive from investments in homes or other property, is almost 50 per cent greater than the average income of all classes of persons? They are being paid their present wages regardless of the fact that it is bankrupting their employers to pay them. They could not be paid more, or as much, under government ownership without imposing a railroad deficit upon the taxpayers. They are the most favored class of workers in the country now. Can they reasonably believe that they would be more favored under government ownership?

Taxing Bigness—the Railway Example

The "Share-the-wealth" plan of taxing large business units relatively more than small business units to reduce the size of business units raises some significant questions regarding the railroads. The provisions of the Interstate Commerce Act to promote consolidations of railroads were passed in 1920. As they have been repeatedly reconsidered by Congress, but have been left in effect for fifteen years, it seems a reasonable assumption, on democratic principles of government, that the public still favors railway consolidations. Without the matter being in any way submitted to the people, however, the new tax program proposes to

levy higher rates of taxation on big than on small corporations, and thereby, ostensibly at least, to penalize the very consolidations of railways which the Interstate Commerce Act encourages and which it repeatedly has been proposed to make compulsory in the supposed public interest.

But what is the real measure of railroad bigness? And what is it to be under the new tax plan? A tentative bill being considered by the Senate Finance Committee proposes a scale of corporate taxes ranging from 10 to 15 per cent on income up to $300,000 a year; 16 per cent on from $300,000 to $1,000,000; 17 per cent on from $1,000,000 to $20,000,000, and 17½ per cent on more than $20,000,000. Under normal conditions the highest rates of taxation would apply to railways owning a vast preponderance of the mileage of the country. But what would be the effect upon railroad bigness? The best single measure of bigness is gross earnings, although the popular view is that it is mileage; but the measure proposed to be used is taxable net income, the larger being the net income the higher to be the rate of taxation. Let us then take the net income actually earned in 1933, as reflected by the federal taxes paid in that year, and see what relationship it had to bigness.

The Chesapeake & Ohio paid the largest amount of federal taxes, but was only the fourth largest railway in point of gross earnings, eleventh in point of investment and twenty-second in point of mileage. The Pennsylvania was second in amount of federal taxes paid, first in gross earnings and investment and third in mileage. The Norfolk & Western was third in federal taxes paid, twelfth in gross earnings, thirteenth in investment and twenty-eighth in mileage. The Union Pacific was fourth in amount of federal taxes paid, fifteenth in investment, sixteenth in gross earnings and twenty-first in mileage. Of the ten railways paying the largest amounts of federal taxes, only four were among the largest ten in point of gross earnings, three in point of investment and two in point of mileage. The Virginian was ninth in amount of federal taxes paid, forty-fifth in gross earnings, thirty-sixth in investment and seventieth in mileage. The New York Central was first in mileage and second in gross earnings and investment, but eleventh in federal taxes paid. The Chicago, Milwaukee, St. Paul & Pacific was second in mileage, seventh in gross earnings and fifty-first in amount of federal taxes paid.

Railroads and "Economic Democracy"

The figures conclusively demonstrate that, under present conditions at least, there is almost no relationship between the sizes of railroads and the rates at which their net income would be taxed under the proposed policy of taxing bigness. It would be a policy, not of taxing size, but of taxing success, and, insofar as success is due to conservative financing and good management, a program of penalizing conservative financing and good management.

The real reason why the railway labor executives have adopted a resolution for government ownership is that they know that they have succeeded in forcing the railways to pay higher wages than they will be able to continue to pay under private ownership unless general business soon and greatly improves, and that they hope that by the use of political pressure they could force the taxpayers to pay at least as much, and probably more, under government ownership. Their idea of "economic democracy" is a system under which economic conditions and facts would count for much less and the political power of organized minorities for much more.

The new tax program, as it would apparently be applied to the railways, would make economies in operation resulting in increased net income evidence of increased exploitation of the masses for the benefit of the classes. In view of the fact that all railways competing for the same business pay employees the same wages and charge shippers and travelers the same rates, it is somewhat difficult to surmise upon what theory differences in net income earned can be construed as evidence of different degrees of exploitation, but no doubt the advocates of graduated taxation as a means of "sharing-the-wealth" can make that clear.

They Will Be Wistful

It is manifest that there is to be practically no legislation at this session that will bring any substantial relief to the railroad industry. The reason is plain. There is no real driving power behind the various measures, no real interest in legislative circles, no real public concern in the matter. Also, there is little or no political capital for anyone in getting something done. In the circumstances the problem will apparently go on the shelf until next year. The chances for anything approaching comprehensive legislative treatment in 1936 can be appreciated best by those accustomed to deal in the mathematics of intra-atomic forces. . .

Apparently there underlies the general public indifference to genuine remedial treatment of this industry a belief that somehow or other railroad management will continue to make ends meet with sufficient closeness to maintain satisfactory service. As for owners of railroad securities, they can take care of themselves where Mr. Jesse Jones and the R.F.C. do not take care of them. Meantime, Senator Wheeler's committee can get after the bankers who have financed railroads in the past, and the Interstate Commerce Commission can get after railroad expenses in the past, while the Co-ordinator pursues his researches into possible economies for the future—this last being at least of some possible constructive value for railroad managers themselves if not for law-making.

Probably the faith of the public in the ability and ingenuity of railroad management to meet any and all needs for such transportation service as the public chooses to use is justified in the light of experience. But there are limits to the quantity of bricks that can be made without straw, and the day is likely to come when people using a governmentally owned and operated railroad system will look back wistfully to days when things were otherwise.

—From the Wall Street Journal

Railroads Complete Long Bridges Over 'Bonnet Carre Floodway

Unusual problems presented in the design and construction of three trestles that carry 7.8 miles of tracks

The Two Pile Drivers About to Complete Work on the Illinois Central Structure

WORK was recently completed on three railway bridges across the Bonnet Carre floodway, about 25 miles west (upstream) from New Orleans, La. While these bridges are all of a distinctly simple type, consisting in the main of creosoted pile trestles, their construction imposed problems of an extraordinary character. Not the least among the noteworthy features is the matter of size, since they include a double-track structure for the Illinois Central, 11,748 ft. long and single-track bridges for the Louisiana & Arkansas and the Yazoo & Mississippi Valley, 9,687 ft. and 7,999 ft. long, respectively, equivalent to an aggregate of about 7.8 miles of single-track bridge work.

From an engineering standpoint, greater significance is attached to the unique character of the waterway. The Bonnet Carre floodway is an important element in the Mississippi River flood control project, comprising an artificial channel 5½ miles long and from 1½ to 2¼ miles wide, through which water will be diverted from the Mississippi river to Lake Pontchartrain during periods of extreme flood stage of the river. Owing to the unprecedented nature of this expedient, assumptions concerning the conditions of flow to which the bridges will be subjected with a maximum discharge of 250,000 cu. ft. of water per second had to be predicated on hydraulic studies rather than experience. This is a matter of considerable uncertainty because of the limited resistance to scour offered by the ground at the site. Equally serious was the problem imposed by the low bearing value of the soil, while another consideration that affected both design and construction was the urgency of rapid completion of the structures to avoid interruption to traffic in the event that flood conditions demanded the use of the spillway.

Land Is But Little Above Sea Level

The east two-thirds of the floodway location is swamp land, partly covered with timber and having an elevation of less than two feet above sea level, while the west third is largely cultivated land sloping upward to an elevation of about ten feet at the spillway structure on the east bank of the river. The three railway crossings are widely separated. The Y. & M. V. line is located from 3,000 to 6,000 ft. east of the spillway, and the L. & A. from 8,000 to 12,600 ft. to the east, while the I. C. double-track line lies parallel to and about 600 ft. from the shore of Lake Pontchartrain.

According to hydraulic studies, the maximum discharge of 250,000 cu. ft. per second will result in a depth of water ranging from 14 ft. at the Y. & M. V. bridge to 11 ft. at the I. C. crossing. As a result, it was necessary to raise the grades of the three railway lines at the crossings of the floodway 12 to 19 ft.

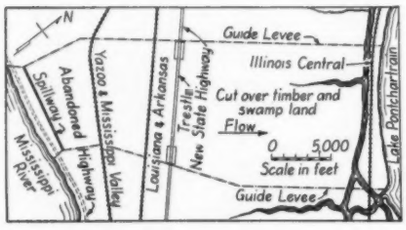
Test borings at the site of the Illinois Central bridge, carried to depths of as much as 150 ft. below the surface, revealed a thick top stratum of black muck, high in humus content, overlying successive strata of clays, some of which contain water in such high proportions as to possess extremely low consistencies, while sand in layers of considerable thickness was encountered at depths in excess of 80 ft. In the face of these conditions and the fact that the ground water level is substantially at the surface in some locations at all times and is rarely lower than three or four feet below ground level anywhere within the area of the floodway, the supporting power of the ground at the site of the bridges is exceedingly low. For example, in the case of the Louisiana & Arkansas bridge, the required penetration of piles was determined after extensive loading tests, from which it was concluded that the safe load on the piles could be taken at 180 lb. per square foot of pile surface. This provides a factor of safety of 2 against a settlement of 0.01 ft. and a factor of safety of 3 against failure.

Adopt Pile Trestles

Studies of the conditions imposed pointed to the necessity of adopting a type of construction in which long piles provide the necessary support. As a result, all three bridges consist primarily of creosoted pile trestles —with creosoted-timber ballasted-decks in the case of the

I. C. and Y. & M. V. structures and with a steel-beam open deck for the L. & A. bridge. A fourth structure, carrying a new state highway, consists of reinforced concrete slab spans, 38 ft. 9 in. long, supported on bents of precast reinforced concrete piles.

The I. C. and Y. & M. V. trestle construction embodies 13-ft. panels, with six piles to the bent in the latter and 12 per bent in the former, but these trestles were divided into isolated units by introducing concrete



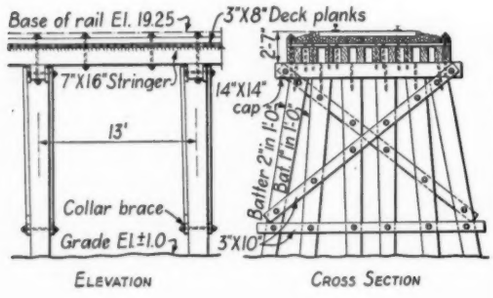
Sketch Map of the Bonnet Carre Floodway

fire walls and steel spans supported on concrete piers at intervals in their lengths. Thus, in the Illinois Central double-track bridge, there are 862 panels of pile trestle, five 70-ft. through plate girder spans, five 35-ft. I-beam spans and 13 fire walls, while the Yazoo & Mississippi Valley single-track structure consists of 593 panels of trestle and eight 35-ft. I-beam spans, and has eight concrete fire walls. The piers and fire walls are supported on foundation piles and the steel spans have ballasted concrete floors.

The Louisiana & Arkansas bridge consists of 484 I-beam spans, each composed of four 27-in. 91-lb. beams spanning between 7-pile creosoted timber bents spaced 20 ft. center to center and carrying a creosoted timber open deck. The structure is divided into 11 units of 44 panels each by double bents, consisting of two 5-pile bents spaced 5 ft. 10 in. center to center and tower-braced to provide longitudinal stiffness. Instead of fire walls, breaks in the continuity of the timber construction have been introduced by installing five steel ties in place of the wooden ties on each side of each double bent. These are wide-flange I-beams, weighing 35 lb. per foot.

Use Long Piles

In the Illinois Central bridge, the piles in the trestle bents are from 78 to 105 ft. long and in the pier foundations they are from 67 to 75 ft. long. In the Yazoo



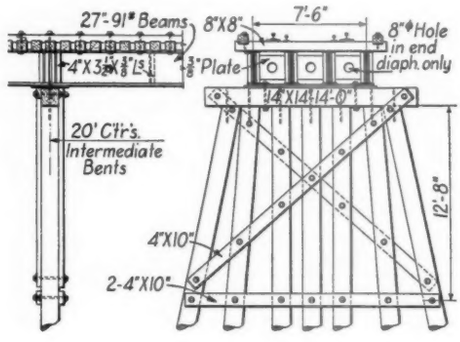
The Yazoo & Mississippi Valley Trestle-Details of the Illinois Central Double - Track Structure Are Similar

& Mississippi Valley bridge, the trestle-bent piles are from 70 to 77 ft. long and the foundation piles from 55 to 60 ft. in length, while in the Louisiana & Arkansas bridge the piles average about 75 ft. in length.

While the U. S. Engineers approved the construction of the tracks on embankment for appreciable distances within the guide levees that define the two sides of the floodway, as a means of shortening the bridges, this arrangement was adopted on an extended scale only for the highway bridge, which has embankment approaches 2,510 ft. long at each end inside the levees. The railroad bridges, on the other hand, occupy much more nearly the full width between levees, in fact, the end bents of the I. C. structure are so placed that the piles just clear the toes of the inside levee slopes. Because of the raise in grade across the floodway, it was necessary to build approach embankments outside the levees, all of which provide 0.5 per cent grades.

As the guide levees were constructed in advance of the bridge work, gaps were left in them where the existing lines of the railways passed through them at their original grades. To permit the ready closing of these gaps and to facilitate construction, the railroads elected to build the bridges on offset locations separated from the old lines by a sufficient distance to avoid interference, but close enough so that materials could be delivered conveniently on the existing tracks.

As in all pile trestle work, construction progress on the three railway bridges was necessarily determined by the rate at which the piles were driven. Recognition of this fact led to intensive studies of pile drivers, not only from the standpoint of the selection of the hammers and the facilities for the expeditious handling of the piles, but also of means to obviate the delays encountered in the use of the conventional railroad mountings which requires that each bent be capped and the deck and track



Typical Details of the Louisiana & Arkansas Structure

be extended one panel before the driver could be moved ahead to drive the piles in the next bent.

These delays can be avoided where some form of land driver can be employed, but equipment of this type was entirely out of the question in the swamp along the Illinois Central, and only slightly less unsuitable at the locations of the L. & A. and Y. & M. V. bridges, where the ground becomes exceedingly unstable following the frequent rains, and would afford inadequate support for drivers capable of handling the long piles. Furthermore, a land driver would require leads some 18 ft. longer than those for a driver supported on the piles previously driven.

Unique Pile Drivers

As a matter of fact, the driver developed for use on the L. & A. bridge was a modification of the land-type driver, in that it was designed to travel on a track laid on the surface. However, to gain the advantage in the handling of the long piles that is made possible only by having the driver face forward, the driver proper was mounted on a gantry frame of such dimensions that it could move forward astride the piles previously driven, while it was supported on rails laid on either side of the bents. This frame, together with the superstructure of the driver, was constructed almost entirely of structural steel.

However, in the swamp along the Illinois Central there was no choice but to support the drivers on the piles as

driven, and the design of drivers developed to meet the conditions there appeared to be so thoroughly practical that it was adopted in modified form for the drivers employed for the less exacting conditions imposed at the Y. & M. V. single-track bridge. Accordingly, four drivers were constructed; two for the I. C., and two for the Y. & M. V. bridges. The following is a description of one of the drivers used on the I. C. trestle; the Y. & M. V. drivers being similar, although somewhat smaller:

As shown in the photograph, the driver comprised a platform or bed 50 ft. long and 20 ft. wide, with a tower at the forward end that terminated in a transverse cap member 52 ft. above the bed. This cap was provided as the support for a track for a 30-in. wheel, the axle of which served as the pivot from which the leads were suspended at a point 14 ft. from their upper ends. Thus, the leads could be readily shifted laterally into the position for driving each pile of the 12-pile bent and also tilted to the desired inclination for the driving of batter piles. The rear of the bed served as the support for a shed that housed the boiler plant, the hoisting engines required to handle the piles and the double-acting steam hammer, the swinging engine used to shift the leads laterally, an electric-generator to supply current for flood lighting and other auxiliary equipment. With the exception of the necessary hardware, the drivers were constructed entirely of wood. McKiernan-Terry double-acting steam hammers were employed, No. 9B3 on the I. C. drivers and No. 9B2 on the Y. & M. V. machines.

These drivers were designed to move forward on wooden rollers that ran on wooden stringers laid on temporary caps placed on the piles. However, this temporary support for the drivers was installed in such a way as to involve a minimum of work. The temporary caps were supported only on the three outside piles on each side, these being cut off at a sufficient elevation above final cutoff so that the six inside piles could be driven so that their tops would be slightly below the temporary cutoff but above final cutoff. No effort was made to line up the bents. The temporary caps and stringers were removed and moved forward as the driving proceeded.

Some Piles Were Spliced

Most of the piles used in the Illinois Central bridge were from 77 to 90 ft. long, although many piles from 90 ft. to 105 ft. long were driven, and in some cases where piles of the greater lengths were not available it was necessary to use spliced piles. Untreated piles were used for the lower section, the splices being formed with sections of 10-in. steel pipe. The character of material encountered is indicated by the fact that frequently the piles settled 10 ft. of their own weight and an additional 20 ft. under the weight of the hammer.

The pile drivers on the I. C. bridge averaged from 2 to 3 piles per hour each, with a crew consisting of a foreman, an assistant foreman and 12 men. The rate of progress on the Y. & M. V. drivers was approximately the same, the advantage of a shorter average length of piles being offset by the fact that the drivers had to be shifted twice as often on the single-track structure to drive the same number of piles. The cutting off, capping and bracing of the bents and the placing of the decks were carried on independently of the pile driving and were not started until the pile driving had proceeded far enough to insure that temporary interruptions in the driving would not delay the subsequent operations.

Cutoff Work

The cutoff work was done from portable "horses," part of it being done with pneumatic saws and part of it with hand saws. The tops of the cutoff piles were

A Cutoff Gang at Work

wrapped with a strip of building paper that projected 1½ in. above the top of the pile, thus forming a shallow pan that would hold creosote for the treatment of the exposed wood. The cutoff crew worked far enough ahead of the capping gang to allow the treatment to be continued for at least three days. The tops of the piles were coated with a mixture of creosote and pitch just before the cap was placed.

On the Illinois Central work the caps were set with the aid of a skid crawler that moved along on the caps previously set. This crawler served as the support for a portable air compressor that furnished the power for a single-drum air hoist which was used to set the caps in place with a line through a pulley in the end of an A-frame mounted on the forward end of the crawler. The compressor also furnished the power for the wood borers used in drilling the holes for the drift bolts. On the Y. & M. V. bridge, where the nature of the ground was such as to permit work from the ground, the caps were set with the aid of a gin pole with a line from a Fordson tractor, which was employed also in distributing piles in advance of the driving.

The bracing gangs worked from wooden "horses" and were equipped with power drills, as were the decking gangs that followed them. The decking material was set

Setting the Caps—Illinois Central Structure

Rip-Rap Protection on the Bank Head, Yazoo & Mississippi Valley Crossing—Guide Levee in the Background

in place by locomotive cranes and track derrick cars, the track being laid as the work proceeded.

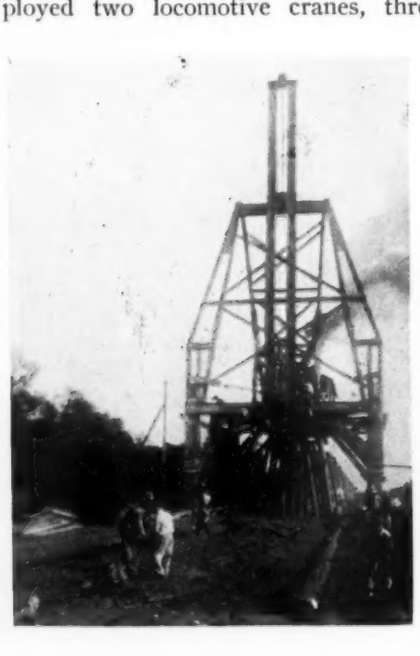
Working Under Difficulties

While the trestle work on both the I. C. and Y. & M. V. bridges was done entirely by "company" forces, all of the grading for the Y. & M. V. approaches, the steel erection on the Y. & M. V. bridge and all of the substructure masonry work for both bridges was done by contractors. The chief interest in the contract work lies in the differences in the methods employed in the substructure work on the two structures by reason of the wide variation in the conditions imposed. Thus, on the Y. & M. V. work, the ground surface was stable enough for the operation of motor trucks for the delivery of concrete from a central mixing plant to the various piers and fire walls, and crawler-mounted cranes were readily used for excavation work, hoisting concrete buckets, etc. However, in spite of this, the contractor saw fit to build a track along the entire length of the bridge for the use of a locomotive crane that was employed in driving the foundation piles from suspended leads.

However, along the Illinois Central bridge, where the ground was very soft and covered with as much as two feet of water, the use of free-wheeled vehicles was impossible and even crawler-mounted cranes had to be worked on mats. On this project the contractor employed two locomotive cranes, three tractor-mounted cranes and a revolving crane mounted on rollers. To permit the use of the locomotive cranes, spur tracks were built from the main track to the location of each substructure unit, these tracks being constructed by laying down a mat composed of logs from 16 to 20 ft. long that served as the foundation for a bed of gravel on which the track was laid.

The various units of hoisting equipment were used in a scheduled sequence for excavation and driving sheet piling, driving the foundation piles, handling the forms and placing the concrete. The concrete was mixed in a paving mixer that was moved from one pier to the next and charged from piles of material unloaded at each site. The footing excavations were carried to an average depth of 15 feet below the ground surface, so that the use of 75-ft. foundation piles resulted in an average penetration of 90 ft. below the surface.

The steel spans for the Y. & M. V. bridge and the I-beam spans for the I. C. bridge were erected in advance of the trestle decking work, while the girder spans in the latter were placed by means of bridge derrick cars working from the completed trestle deck.



A Gantry-Frame Pile Driver Was Used on the Louisiana & Arkansas Bridge

The L. & A. Trestle

The construction of the Louisiana & Arkansas trestle, which was done under contract, was handled in three separate operations. The piles were driven by the gallows-frame driver previously mentioned, followed by a ground crew that sawed off the piles and lined, braced and capped the bents. The placing of the deck by means of rail-mounted hoisting equipment followed.

Setting the Steel Beam Spans on the L. & A. Bridge

As shown in one of the illustrations, the pile driver consisted of a steel and timber gantry frame that provided for the support and lateral movement of the leads in much the same manner as in the I. C. and Y. & M. V. equipment. In addition to the boiler and hoisting engines, the power plant included a generator to supply current for flood lighting, as the driver was operated in two shifts. The hammer was a Vulcan No. 1. An average of 28 piles were driven per day for both shifts.

The piles were cut off with handsaws, while the boring of piling for sash and sway-bracing was done with air tools. The tops of the piles were treated with a creosote-coal tar solution and covered with three thicknesses of burlap saturated with creosote and coal tar before setting the caps in place. The holes bored in the piling were treated with creosote applied under pressure. The caps, ties and guard rails were preframed and prebored before treatment, which eliminated any field framing, and reduced the field drilling to that required for bracing the bents. Because of the preboring of the caps, special pains were taken in straightening the bents and

The Illinois Central Trestle Is 11,748 Ft. Long

in locating the caps, which were spotted in the longitudinal direction from stakes driven one foot each side of the bent and in the transverse direction with the aid of a transit set up on one of the double bents. Work on the bents was conducted from staging supported by a light gallows frame hung over the caps.

The steel beam spans were assembled in the fabricating shop so that they could be shipped and erected as complete units, thus eliminating all field riveting. They were erected by a locomotive crane operated on the existing main track. After the completion of the field painting, the decking material was set in place by a locomotive crane, and as all of this material had been preframed and prebored before treatment, the field labor was confined to placing and bolting the timber.

Grading Operations

The grading for the approaches to the three bridges required the placing of 101,600 cu. yd. on the Illinois Central, 175,000 cu. yd. on the Louisiana & Arkansas and 144,700 cu. yd. on the Yazoo & Mississippi Valley, all of which was done under contract except that for the Illinois Central. On that road, the material used was stripping from a gravel pit, involving about 40 miles of line haul in 40 to 50-car trains of 20 and 30-yd. cars. The cars were unloaded on a dumping track that was raised and thrown as the work progressed. Of the total of 101,600 cu. yd. placed, 36,862 cu. yd. was required to compensate for subsidence, most of it in the south approach, where the aggregate subsidence was as much as 30 ft. at places where the finished roadbed elevation was only 13.5 ft. above the original surface. Upheavals on the side away from the old embankment raised the ground as much as 10 ft., and disturbances were noted as far as 269 ft. from the center line of the new fill.

Because of the limited supporting power of the foundation material, the approach embankments for the L. & A. bridge were constructed with side slopes of 6 to 1. These flat slopes spread the footing and provide a counterweight which keeps the compressed soil foundation from shearing and side-slipping from under the embankment. The grading was conducted so as to form this embankment in layers, thus placing the counterweight material at the edges of slope in advance of applying the maximum load produced by the central portion of the fill, and confining the movement to that which resulted from the compression of the foundation material.

The approach embankments were made from material hauled a distance of two miles in 10-car trains of 20-yd. dump cars, draglines being used both for loading and in making the embankment. Two reasons are given for using the dragline in making the fill—(1) to permit the use of the existing operated track for unloading and (2) to place the filling material in layers. In carrying out this plan, pits were excavated alongside the operated track to facilitate the clearing of the cars as they were dumped. The material was then picked up at these several points of unloading by the dragline and placed in the fill.

The design and construction of the Illinois Central and the Yazoo & Mississippi Valley bridges were developed under the supervision of A. F. Blaess, chief engineer, and C. C. Westfall, engineer of bridges, Illinois Central System, while the Louisiana & Arkansas project was under the direction of E. F. Salisbury, chief engineer. O. T. Dunn and R. L. Tatum were the engineers in direct charge of the work on the I. C. and Y. & M. V., and on the L. & A. bridges, respectively. The List & Weatherly Construction Company, Kansas City, Mo., was the contractor for the L. & A. bridge work, while the Gifford, Hill Construction Company, Dallas, Tex., did the grading on the L. & A. approaches and also on the south approach to the Y. & M. V. bridge. The Walsh Construction Company, Davenport, Iowa, had the contract for the concrete piers and fire walls of the Illinois Central bridge and for the grading of the north approach to the Y. & M. V. bridge, while the R. J. Reid Contracting Company of Birmingham, Ala., built the concrete piers for the Y. & M. V. bridge.

* * *

Loaded Banana Cars on the La Ceiba, Honduras, Pier of the Standard Fruit & Steamship Company's Railroad

Signaling as a Factor in Railway Operation*

An explanation of the benefits being effected in expediting train operation and reducing operating expenses

By Burt T. Anderson

Publicity Representative, Union Switch & Signal Company, General Railway Signal Company

IN THESE days when operating officers must reduce expenses and at the same time handle trains on faster schedules, as well as look forward to gradual increases in traffic, the methods being used to accomplish these results are worthy of consideration. Various railways have been solving many of these problems effectively for years by the use of railway signaling which has kept pace with and preceded the demands for increased operating efficiency and economy. While safety was undoubtedly the original purpose for signaling, in recent years this has been taken for granted and signaling has been installed more often to reduce delays, facilitate train operation, improve operating efficiency and decrease the cost of transportation.

Since the first installation involving 10.5 miles over the Louisville bridge of the Pennsylvania in 1882, train operation by signal indication has grown until on December 1, 1934, there were 369 installations reported by 54 railways on 4,231 miles of track. Some of the carriers having 180 miles or more are listed in an accompanying table.

From 1882 until 1905 less than 95 miles were added to the original 10.5-mile installation. An increased mileage was installed between 1905 and 1925, and a greatly increased mileage from 1925 to 1934. This large increase was brought about, in 1927, by the introduction of modern centralized traffic control systems which made it possible to provide for the control of switches and signals over all or any portion of a division, directly from a single location, thereby making train operation by signal indication a practical reality by increasing the economic scope of this form of directing train movements.

As operating men, you are more interested in the results in improved train operation than in the signaling details, i. e., whether the results obtained by signal indication are brought about by remote control, centralized traffic control or by either-direction signaling using traffic locking between interlockings. These details are for the engineering officers, signal engineers, and others who design the signaling for the various track and operating requirements. The actual results of train operation by signal indication on many railways are now available and the following outstanding features are particularly interesting to operating officers.

List of Roads Having Extended Mileages of Train Operation by Signal Indication

	Track Miles
Santa Fe	462
Baltimore & Ohio	276
Boston & Maine	367
Chesapeake & Ohio	189
Burlington	438
Missouri Pacific	270
New Haven	536
Pennsylvania	278

On 23 of the 369 installations for which data have been published, the greater capacity deferred the necessity of providing additional track facilities, thus effecting substantial savings in both construction and maintenance costs. On 13 of these 23 installations, totaling 332 track miles, the new signaling postponed second track and the installation of center sidings, at a first cost of approximately $19,000,000 and a cost of over $1,900,000 for annual maintenance charges. Studies show that the first cost of the signaling is only one-tenth to one-fifth of the cost of providing the additional track facilities.

On 10 installations, the freight train time saved averaged 1.2 min. per mile, an average increase of 28.1 per cent. On a 32-mile double-track installation on the Texas & Pacific, the average time of freight trains has been reduced 60 min. and that of passenger trains 15 min.; on the 30-mile single-track Pennsylvania installation, the average freight train time was reduced 49.8 min. and on the 39.7 mile single-track Southern Pacific installation, 68.5 min. The average freight train speed was increased 87 per cent on the Pennsylvania, 47 per cent on the Missouri Pacific, and 36 per cent on the New York Central installations. Studies made on 12 installations with 10 to 30 trains per day show that the percent-

Increase in Gross Ton Miles per Train Hour as Effected by C.T.C. on Three Installations

Railway		GTM Per Train Hour		Per Cent Increase
		After	Before	
P.R.R.	Ben Davis, Ind.—Almeda	86,558	45,709	89
M.P	Atchison, Kan.—Edgewater Jct.	74,740	47,745	57
N.Y.C.	Stanley, Ohio—Berwick	36,179	26,100	39

* Abstracted from a paper presented before the convention of the American Association of Railroad Superintendents at Chicago on June 19.

Passenger Train on C.T.C. Territory on Missouri Pacific at Merrit, Kan.

age of freight train time saved varied approximately as the number of freight trains, i.e., 20 per cent for 20 trains per day, 30 per cent for 30 trains per day.

Centralized traffic control installations are handling 70 trains per day on single track, 137 to 156 trains per day on double track in the United States, 210 trains per day on double track in England, and 320 trains per day on three tracks in France. Lest these references to congested traffic territory create an erroneous impression, it might be stated that the majority of the 369 installations are in lighter traffic territory. In fact, 200 installations were made where the traffic did not exceed 10 to 40 trains per day.

Heaviest Traffic Territories Operated by Signal Indication

Location	Miles	Trains Per Day
Single-track, B. & M., Salem, Mass.	1.0	118
Double-track, P.R.R., Philadelphia, Pa.	3.0	428
Three-track, D. L. & W., Newark, N. J.	5.9	266
Four-track, N.Y.C., New York	5.7	522

Power operation of siding switches eliminates the stop to enter a siding and the stop to close the switch on leaving the siding, thus reducing delay time at meeting points and often making it possible to advance slower trains against faster trains. One railroad, on a 55-mile single-track installation, with 45 trains per day and 33 controlled switches, eliminated 46,355 train stops per year. On many installations non-stop meets are of frequent occurrence, the percentage averaging from 50 to 90 per cent of total meets.

In many cases train loads have been increased because of removing restrictions imposed by grades at entrance points to sidings and yards on account of power operation of the switches, or because elimination of delays permits greater loading and maintenance of schedules. Studies on five installations showed an increase in tonnage varying from 1 to 16 per cent.

Train-Graph and Operating Advantage

Another outstanding signal development in recent years has been the automatic train-graph to record instantly the movement of a train as it passes each end of a passing track, each crossover in double-track territory, and other designated OS-ing points. Under the train-order method of operation, it is necessary to have an operator at each OS-ing point to report the time, and for the dispatcher to record the time on the train sheet. At stations and other points where no operators are on duty, or when the offices are closed part time, the information is not available and this practice frequently results in some delays to trains, particularly at night when long blocks are in operation. An automatic OS gives the dispatcher the equivalent of a three-trick office at each OS-ing point without the necessity of maintaining day and night offices. As these automatic messages are graphically recorded on the train-graph sheet, the passage of trains is not only brought to the attention of the control operator by audible and visual indications, but a permanent record is produced which may be attached to the daily train sheet. Generally, three to four times as many OS-ing points are recorded as compared with train-order operation and this facility has proved a great benefit in checking trains, detecting broken rails—often in time to prevent delays to following trains, checking train speeds, making efficiency tests, and checking the observance of signals. Train operation by signal indication provides increased safety and other intangible advantages too numerous to explain here, which cannot always be shown in an economic statement.

In view of these outstanding advantages of the signal indication method of directing train movements, it is not surprising that studies on 25 installations on 18 railways, totaling 453.9 track miles, representing a cost of about $2,250,000 showed an annual saving varying from 12.7 to 120 per cent, averaging 25 per cent.

Train Movements are Directed by Signal Indication on C.T.C. Territory on the Pennsylvania Between Almeda, Ind., and Ben Davis, 30.2 Miles

Other Types of Modern Signaling

In addition to train operation by signal indication, there are a number of other types of signaling which reduce train delays, increase operating efficiency, expedite train movements, and reduce operating expenses, i.e., remote control, consolidated interlockings, automatic interlockings, car retarders, automatic train control and cab signals, and signaling for high-speed train operation, which will be explained briefly.

Remote control is a development of interlocking practice for controlling switches and signals, some distance from a station or block office. It is adaptable to points where trains enter or leave yards, and where it is more expensive to provide switch-tender service or to stop trains, or it may be used to advantage at ends of double track. While turnouts at yard entrances and other locations are sometimes operated manually by trainmen, switchmen or other designated employees without signal protection, power operation with signal protection provides the greatest safety and shows the lowest annual cost of operation. A saving of more than one freight train stop per day will generally pay the operating charges on a remote control installation. Studies on 22 installations, on 15 railways, showed an annual return of 42.9 per cent on the total cost. In addition, these installations resulted in increased safety of train operation, track capacity, and on-time performance, and sometimes deferred more expensive alternative improvements.

During the last 12 years there has been a greater tendency to consolidate interlockings in order to reduce operating expenses, avoid the expense of duplicate buildings and block offices, and centralize the direction of train movements. Examples of this practice occurred on the Santa Fe at Galveston, Tex., where three plants were consolidated; on the Pennsylvania at Philadelphia, Pa., where 16 plants were consolidated into 4 interlockings; at Dayton, Ohio, where 1 modern interlocking replaced 5 plants, and probably the best example is on the Pennsylvania-Reading joint operation between Camden and Atlantic City where about 25 plants were replaced with 5 modern interlockings. Studies of 22 consolidated interlockings on 8 railways showed an annual average saving of 22 per cent. The saving on the

various installations varied from 12 to 169 per cent annually.

The early automatic interlocking installations were brought about by the necessity for providing an economic signaling arrangement for eliminating statutory stops for non-interlocked railway grade crossings where either or both of the crossing lines had a traffic of a few trains per day. Such plants have been installed even with heavy traffic or where part-time manual control is desirable on account of local operating conditions. They have replaced attended mechanical and power interlockings as renewals became necessary, and where the traffic conditions warranted the simplified layout. They have also been installed in place of "stop" signs and target signals, for automatic protection of gauntlet tracks over bridges and through tunnels, and at junctions of branch lines with main lines. As of December 31, 1931, there were 305 automatic interlocking plants in service, with an average daily train movement of about 6,800 trains, while on January 1, 1935, there were 545 installations reported on 80 railways.

This type of signaling not only eliminates the necessity for attendants for the operation of the interlocking levers, but also eliminates the machine and other interlocking appliances, the interlocking station and other buildings, and, in addition, saves the yearly cost of maintaining and operating these facilities. Studies made on 51 installations on 25 railways showed an annual return of 82 per cent on the total cost above interest charges. One railway estimated that the elimination of only two freight train stops per day, and another railway estimated that a time saving of 14 min. per day, would pay the operating charges of an automatic interlocking.

Car Retarders

After 10 years' service, we can now take stock of the usefulness of car retarders in expediting yard classification and the economic and other benefits derived therefrom during periods of both heavy and light traffic. In 1933 a questionnaire was sent by Committee I of the Signal Section to the 17 railways having car retarders in service, and the results were as follows:

1. The saving in operation per car handled varied from a maximum of 55 cents to a minimum of 8.7 cents.

2. The annual saving in yard operation ranged from a maximum of $457,710, with a return of 67.3 per cent

(*Continued on page 16*)

Freight Car Loading

WASHINGTON, D. C.

PARTLY because of a marked falling off of coal traffic which for some weeks had been stimulated by the prospects of a coal miners' strike, revenue freight car loading in the week ended June 22, a total of 567,847 cars, showed a decrease of 85,245 cars as compared with the week before and of 55,475 cars as compared with the corresponding week of last year. This was also 41,780 cars below the figure for 1933. Coal loading for the week amounted to 87,722 cars, a decrease of 69,523 cars as compared with the week before and of 10,550 cars as compared with 1934. All other commodity classifications showed reductions as compared with the week before and also last year, except that forest products showed an increase of 1,111 cars over the total for the 1934 week. The summary, as compiled by the Car Service Division of the Association of American Railroads, follows:

Revenue Freight Car Loading

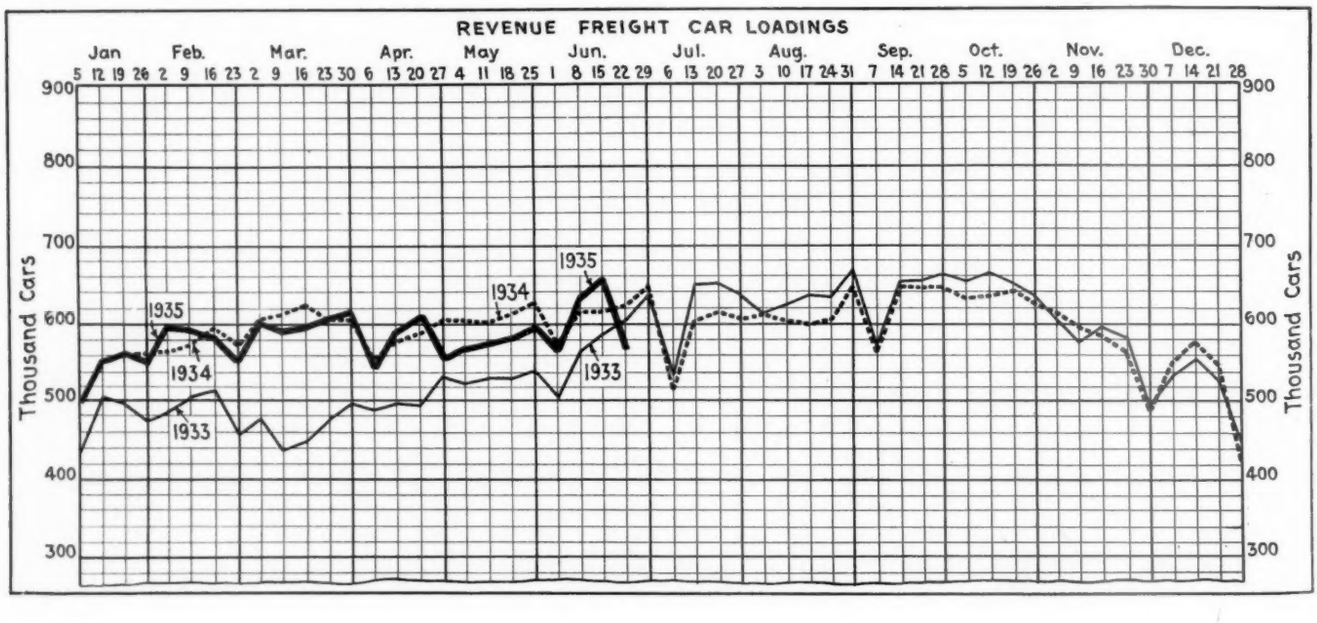
For Week Ended Saturday, June 22

Districts	1935	1934	1933
Eastern	131,480	133,768	141,415
Allegheny	113,731	125,703	122,667
Pocahontas	36,434	42,263	43,262
Southern	79,044	82,364	87,552
Northwestern	82,800	92,744	75,929
Central Western	81,135	95,979	86,821
Southwestern	43,223	50,501	51,981
Total Western Districts	207,158	239,224	214,731
Total All Roads	567,847	623,322	609,627
Commodities			
Grain and Grain Products	25,091	39,534	38,439
Live Stock	9,084	15,290	15,549
Coal	87,722	98,272	103,320
Coke	5,721	6,744	5,687
Forest Products	25,946	24,835	28,100
Ore	31,373	34,412	14,239
Merchandise L.C.L.	156,571	160,234	170,292
Miscellaneous	226,339	244,001	234,001
June 22	567,847	623,322	609,627
June 15	653,092	618,881	592,759
June 8	630,836	616,768	569,157
June 1	565,342	579,656	512,974
May 25	599,543	625,990	545,551
Cumulative Total, 25 Weeks	14,558,021	14,790,620	12,702,570

Car Loading in Canada

Light loading in both the Eastern and Western divisions reduced Canadian car loadings for the week

(*Continued on page 12*)



Two Roads Petition Federal Court to Reorganize

North Western and Milwaukee take action, following conferences with larger security holders to negotiate scaling of fixed charges

THE Chicago & North Western and the Chicago, Milwaukee, St. Paul & Pacific, on June 28 and June 29, respectively, petitioned the federal district court in Chicago for authority to reorganize under Section 77 of the amended federal bankruptcy law. The managements were authorized to continue in possession and operation of the properties. Both railroads are confronted with the problem of meeting matured and future interest and loans maturing during the year and, after conferences with larger security holders in an effort to negotiate a scaling down of obligations, appealed to the court in order to expedite reorganization and meet legal requirements.

The Chicago & North Western

According to the Chicago & North Western's petition, interest payments and maturities due between now and the end of the year total $29,464,891. The road is without funds to pay $1,717,956 interest due May 1 on its 4¾ per cent convertible bonds after the expiration of a 60-day grace period, and has no means of borrowing this sum. Obligations of $500,000 due the Railroad Credit Corporation, $498,465 interest on a Reconstruction Finance Corporation loan and $187,000 on equipment trust certificates held by the R.F.C. are also in default.

The filing of the North Western's petition of bankruptcy was necessitated also by failure to negotiate a scaling of interest charges with bondholders. At a meeting on June 4, directors discussed plans for the temporary deferment of a portion of the road's interest charges, following which a tentative plan of readjustment was formulated. The Financial committee of the company met in New York on June 18 with representatives of its bondholders to discuss the plan, but at this meeting and subsequent ones no agreement could be reached.

At a meeting of the board on June 27, the directors decided that it was inadvisable to attempt further payments of service charges at this time and, therefore, filed a petition under section 77. In the meantime, negotiations with the bondholders will continue and it is hoped that present proposals which, according to the management, amount to a five-year moratorium, will be found acceptable within 90 days. In the meantime, according to the directors, by filing a petition under Section 77, judicial steps will be inaugurated looking to the assistance of the Interstate Commerce Commission to bring about the approval of a plan.

The difficulties of the Chicago & North Western, according to a statement by the directors, may be attributed to a combination of causes, (1) the long continued depression, (2) four years of unprecedented drought in agricultural regions, (3) the great growth of unregulated and subsidized competitive forms of transportation, (4) high taxes imposed on railroads by state and local assessing bodies, (5) restoration of the 10 per cent wage decrease plus increases in cost of materials and supplies due to the application of the codes in the last year.

The Chicago & North Western operates 8,364 miles of lines in Illinois, Wisconsin, Michigan, Iowa, Minnesota, South Dakota, North Dakota, Nebraska and Wyoming, one of the richest agricultural sections in the United States. Before the war it was rated as one of the strongest carriers in the Northwest, with a capital structure which was regarded as a model of sound balance as between mortgage, prior debt and equity obligations. At the close of 1934, the general balance showed assets and liabilities totaling $676,206,118. Current assets amounted to $29,219,532, and current liabilities to $45,584,749. It had outstanding at the close of last year preferred and common stock amounting to $180,839,845, and a total funded debt of $345,769,100. Of its funded debt, $5,757,800 is due in 1935, and $35,575,200 in 1936, while maturities for the balance occur in 1938, 1939, 1940, 1941, 1942, 1943, 1944, 1945, 1947, 1948, 1949 and 2037. It owes the Reconstruction Finance Corporation $27,302,933, the Railroad Credit Corporation $1,656,801, and banks $5,000,000.

During the past four years, the company has failed to earn its fixed charges, which it more than earned in 1928, 1929 and 1930. In 1928, it earned its fixed charges 1.89 times; in 1929, 2.13; in 1930, 1.51; in 1931, 0.64; in 1932, 0.34; in 1933, 0.55; and in 1934, 0.57 times. It has earned net railway operating income each year, the largest being $26,220,149 in 1929, and the lowest $1,422,836 in 1932, as compared with $5,202,104 in 1934. Its total nonoperating income amounted to $3,191,367 in 1929, $5,766,223 in 1932, and $3,337,741 in 1934. The interest on its funded debt amounted to $13,612,067 in 1929; $15,972,087 in 1932; and $15,723,887 in 1934. Its total operating revenues decreased from $154,732,947 in 1929 to $72,491,521 in 1932 and then increased to $75,893,418 in 1934. Its total operating expenses have been reduced each year, from $115,286,040 in 1929 to $61,811,819 in 1934.

Under the proposed plan of reorganization, the fixed charges of the company will be reduced and with an increase in business it will be able to meet its obligations as they mature.

The Milwaukee Plan

The Milwaukee owes $8,309,050, including $2,066,000 equipment obligations due April 1, June 1 and July 1, $10,442 interest on a Railroad Credit Corporation loan due June 27, $3,275,879 in R.F.C. notes and interest of $133,117 due June 27, and $2,843,612 of general mortgage bonds due July 1. Obligations maturing during the next 12 months include $3,206,580 principal due on equipment trust notes, $9,533,878 principal on other obligations and $11,308,116 additional fixed interest. The balance of income available for interest on the funded debt during the first six months of this year is estimated

at $1,400,000. The cash balance as of June 30 was approximately $4,000,000 and according to the petition, the road is unable to procure funds with which to meet various obligations.

The decision of this road to apply to the court for permission to reorganize was reached at a conference of directors in New York on June 27, and the application was filed for the purpose of carrying out a tentative agreement reached with the R.F.C. and those bondholders of the Milwaukee who had been contacted by the management of the road. While these parties do not constitute a majority of the bondholders, they represent substantial holdings, being chiefly insurance companies and banking institutions. In its application, the railroad requests the Interstate Commerce Commission to set an early date for a public hearing upon the plan dated July 1, 1935, and filed in the federal district court.

The plan contemplates that the Reconstruction Finance Corporation will make additional loans to the railroad up to $12,000,000 and will purchase equipment certificates for an additional $12,000,000 to provide for 80 per cent of the cost of new equipment. Interest on the general mortgage bonds for a 10-year period is to be two-thirds fixed and one-third contingent, provided that if full interest on the bonds is earned for any three years or for the last two years during the five years commencing on the January 1 next succeeding confirmation of the plan, or if so earned for three consecutive years after the first five years, all interest on the bonds shall thereafter be fixed.

All interest on the 50-year 5 per cent mortgage bonds and on the Chicago, Milwaukee & Gary first mortgage bonds becomes contingent, with the proviso that if unpaid accumulated interest shall at any time aggregate 10 years' interest a majority of the bondholders may declare the issue due and payable. These issues are also made convertible at the option of the holders into the new preferred stock at par.

For the protection of the general mortgage, 50-year and Gary bonds the plan provides for the deposit of all the preferred and common stock of the reorganized company under a voting trust. The persons who are to be voting trustees have not been selected but they are to be satisfactory to the institutional security holders with which the railroad company has been in conference. It is intended that at least a majority of the board of the reorganized company shall be representatives of holders of the above mentioned bonds, and that so long as any part of the Reconstruction Finance Corporation loans are outstanding one person nominated by the R.F.C. shall be elected to the board.

The adjustment mortgage bonds will receive, for each $1,000 principal amount with $260 of accumulated interest to June 30, 1935, $1,260 par value of the new 5 per cent non-cumulative preferred stock voting trust certificates of a par value of $100 per share, participating equally per share in dividends with the common stock after the latter has received 5 per cent upon the $25 par value thereof in any year, preferred as to assets as well as dividends.

The existing preferred stock will receive share for share new common stock voting trust certificates of a par value of $25 per share and the common stock will receive for each share new common stock voting trust certificates for one-third share. Equipment trust obligations aggregating $18,192,000, maturing between April 1, 1935 and December 31, 1940, inclusive, will be extended to mature 20 per cent on the date of present maturity and 20 per cent annually one, two, three and four years thereafter, respectively. The existing R.F.C. and Railroad Credit Corporation loans are to be extended to July 1, 1945. The Milwaukee & Northern first mortgage and consolidated bonds are to be extended to June 1, 1949. The Bedford Belt first mortgage bonds, Southern Indiana first mortgage bonds and the Chicago, Terre Haute & Southeastern first and refunding mortgage bonds and income bonds, all secured upon property leased to the Chicago, Milwaukee, St. Paul & Pacific, are to remain undisturbed but provisions of the lease will be modified waiving obligations of the lessee with respect to replacement of equipment. Any existing defaults under the other mortgages will also be waived and certain modifications made in the mortgages.

The difficulties confronting the Milwaukee, which operates 11,161 miles of lines in Illinois, Indiana, Iowa, Idaho, Michigan, Minnesota, Missouri, Nebraska, Montana, North Dakota, South Dakota, Wisconsin and Washington, are, to some degree, a continuation of those that existed prior to 1927, when the Chicago, Milwaukee, St. Paul & Pacific Railroad Company was incorporated to take over the properties of the Chicago, Milwaukee & St. Paul Railway Company under foreclosure. At that time, the fixed charges of the company were reduced to what was thought a level corresponding to traffic at that time. Since 1928, however, the business of the company has decreased so that during the past five years it has failed to earn its fixed charges.

The assets and liabilities of the company, as of December 31, 1934, amounted to $743,632,700, of which current assets amounted to $24,754,929 and current liabilities to $20,536,341. It had outstanding at that time $105,175,913 of common stock and $119,307,300 of preferred stock. Its funded debt, amounting to $476,443,181, includes outstanding bonds amounting to $438,245,789, loans from the Reconstruction Finance Corporation of $7,999,462, loans from the Federal Emergency Administrator of Public Works of $2,291,000 and equipment obligations of $27,906,930. Its interest, matured and unpaid, amounts to $3,260,625 and its funded debt, matured and unpaid, amounts to $310,000. In 1929, it earned 1.3 times its fixed charges; in 1930, 0.8; in 1931, 0.43; in 1932, 0.04; in 1933, 0.41; and in 1934, 0.47. On December 31, 1934, the interest on its funded debt totaled $22,639,273, of which $9,143,684 was accrued interest on bonds.

The total operating revenues of the carrier declined from $171,361,385 in 1929 to $84,900,833 in 1932, and increased to $87,859,792 in 1934. At the same time, the total operating expenses decreased from $128,800,860 in 1929 to $64,596,840 in 1933, and $69,655,547 in 1934. In 1929, the road earned a net income of $7,074,014, but in each year since has had a deficit, such deficit amounting to $16,247,620 in 1934.

Freight Car Loading

(*Continued from page 10*)

ended June 22 to 43,580 cars, as against 44,436 cars for the corresponding week last year and 45,726 cars for the previous week, according to the compilation of the Dominion Bureau of Statistics.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada:		
June 22, 1935	43,580	21,483
June 15, 1935	45,726	21,510
June 8, 1935	43,832	21,212
June 23, 1934	44,436	20,591
Cumulative Totals for Canada:		
June 22, 1935	1,068,549	559,727
June 23, 1934	1,048,169	581,036
June 24, 1933	865,391	439,026

Co-ordinator's Report on Scrap Made Public

Pooled sorting and dismantling and the elimination of middle men urged after nation-wide inquiry

THE results of a national survey of railroad practices in the handling and disposing of their scrap were made public by the Federal Co-ordinator of Transportation on June 19, when the report of the inquiry conducted by the Co-ordinator's Section of Purchases was submitted to the regional co-ordinating committees of the railroads for study. The report is the outcome of a survey begun on October 28, 1934, when the Co-ordinator requested the preparation of detailed statistics by all railroads of the United States for the avowed purpose of determining the cost of handling and preparing scrap for the market and the net revenue accruing to the railroads through the sale of scrap, the advantages and disadvantages of dismantling equipment on the railroads instead of by outside agencies, the possibility of economy through the establishment of central scrap plants to serve two or more roads and the relative position of the railroads as scrap producers. In this report, which contains 160 letter-size pages of text and tables, the Co-ordinator concluded that the carriers can reduce the cost of their operations and secure a higher average price for scrap sold by dismantling their own equipment, by a more complete preparation of scrap by their own forces, by selling more scrap direct to ultimate consumers, by further centralizing operation and by establishing greater uniformity in cost accounting. "The need for accurate knowledge of the cost of performing different kinds of work and for uniformity in accounting," the report states, "has never been so forcibly demonstrated as it is by the data collected."

During the five-year period, 1929 to 1933, inclusive, Class I, II and III roads and switching and terminal companies shipped 14,807,176 net tons of classified ferrous scrap and 209,863,797 lb. of classified non-ferrous metal scrap. These figures do not include materials handled on an "exchange" basis with manufacturers, such as cast iron wheels, journal bearings, etc.

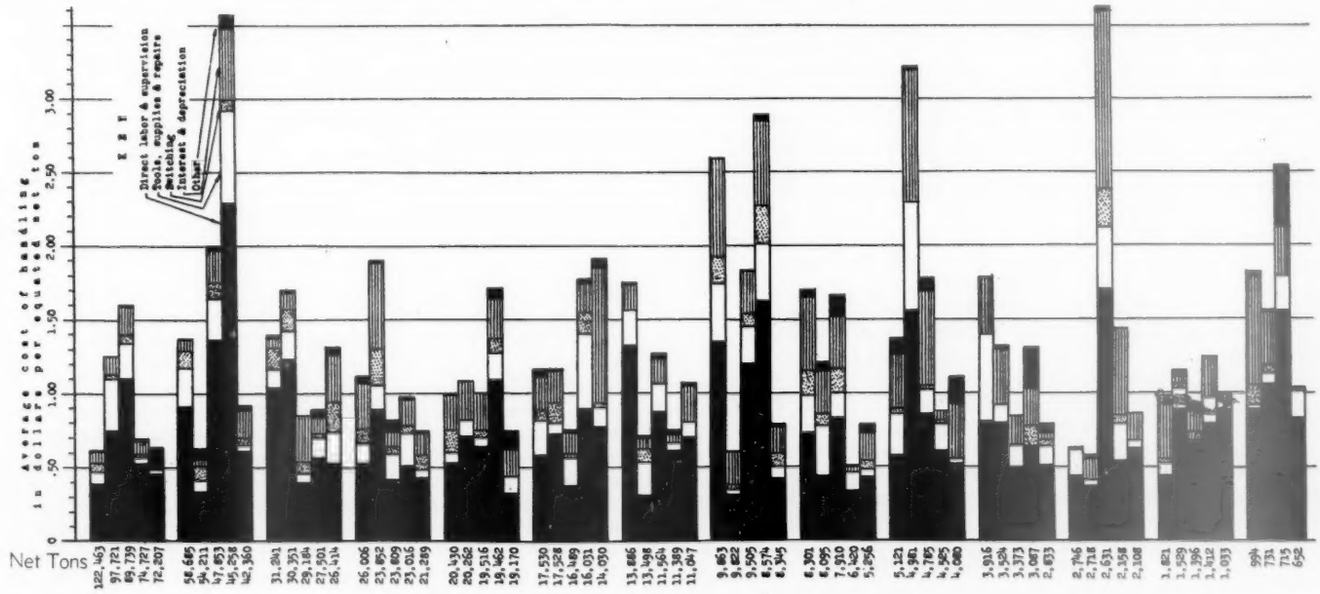
Approximately 60 per cent of all classified ferrous scrap shipments by Class I roads were handled through sorting and dismantling plants. Direct sales of classified ferrous scrap to the ultimate consumers during 1933 amounted to 28.79 per cent of total shipments of such scrap by Class I roads. The proportion of scrap sold direct to the ultimate consumer was larger in the case of that shipped after being prepared than for that shipped direct from releasing points.

For the 2,916,974 net tons of classified ferrous scrap shipped during 1933, the Class I roads received $22,804,052 or an average of $7.82 per net ton. The 35,523,088 lb. of classified non-ferrous metal scrap shipped during 1933 brought the roads $1,313,527 or an average of $0.0370 per lb. These amounts exclude any freight revenue that may have been earned in delivering this scrap.

The average money received for ferrous scrap shipped direct from point of origin was 65 cents greater than that received for scrap shipped after being prepared at scrap sorting and dismantling plants. This is due primarily to the fact that approximately 75 per cent of the total tonnage shipped direct consisted of wheels, axles and rail.

Classified ferrous scrap sold direct to the ultimate consumer in 1933 amounted to 839,675 net tons. The money received for 119,170 tons was not reported separately. The remaining 720,505 tons brought on the average $8.76 per net ton. That shipped direct from releasing points averaged $9.71 and that shipped after being prepared at scrap sorting and dismantling plants, $8.21. If the total 2,155,267 net tons had been sold at consumers' prices, the return for classified ferrous scrap would have been increased from $16,214,000 to $17,835,000, or $1,600,000.

Class I roads had on hand on January 1, 1934, 832,903 tons of ferrous scrap and 19,872,812 lb. of non-ferrous metal scrap, not including scrap locomotives and cars not cut up. Class II and



Comparative Costs of Handling Scrap on Various Roads

III roads and switching and terminal companies had on hand an additional 46,814 tons of ferrous and 927,312 lb. of non-ferrous scrap. Total shipments of ferrous and non-ferrous scrap in 1933 amounted to $2,934,735, or an average of 244,561 net tons per month. On this basis, the 833,839 net tons on hand was approximately 3.4 months' supply.

When tons unloaded, tons loaded, and tons sorted and prepared are not equal, which is the case in most instances, no one of the figures can be used as a basis for comparing average costs per ton handled. It was, therefore, necessary to develop a figure which would represent for each road an equivalent tonnage of scrap, each ton of which could have been unloaded, sorted and prepared, and reloaded for the total cost reported. This required assignment of an estimated uniform cost to some part of the operation.

Twenty-five cents was assigned as the cost of unloading a net ton of scrap, and the same amount for loading, making 50 cents for unloading and loading per net ton. Although this assigned cost can be supported in the few instances in which it can be computed separately from data given in the returns, it is an arbitrary amount, assigned from necessity rather than from any assumption that it is a correct average for all operations.

To compute "equated" tons handled, the sum of the tons unloaded and tons loaded is divided to find the equivalent tons unloaded and loaded. The equivalent tons unloaded and loaded is then multiplied by 50 cents to find the total cost of unloading and loading. The cost of unloading and loading is then deducted from the grand total of scrap plant costs, leaving the total cost of sorting and preparing. The cost of sorting and preparing is then divided by the net tons sorted and prepared to find the average cost per ton. To the average cost of sorting and preparing per ton is then added the cost to unload and load, and the sum is divided into the total scrap plant cost to find the equated tons handled. The averages per ton for the detailed costs on individual roads were obtained by dividing each item by the number of equated tons handled.

Of the 80 returns on scrap plant costs, 11 could not be put on a comparable basis with the rest and were not included in the recapitulation. The average cost of unloading, sorting and preparing, and reloading, per net ton of scrap, determined as described, was found to be $1.231, of which 91.3 cents covered charges for direct labor and supervision, and for tools, supplies and repairs.

Direct labor and supervision account for approximately 60 per cent of all scrap sorting plant costs, averaging 73.7 cents per equated ton handled. In the Eastern district, individual averages range from 30.5 cents to $1.698, the grand average being 60.8 cents; in the Southern district, the range is from 34.2 cents to $1.232, with a grand average of 68.6 cents. In the Western district, where the grand average of 85.1 cents considerably exceeds the others, the range is from 30.6 cents to $2.294.

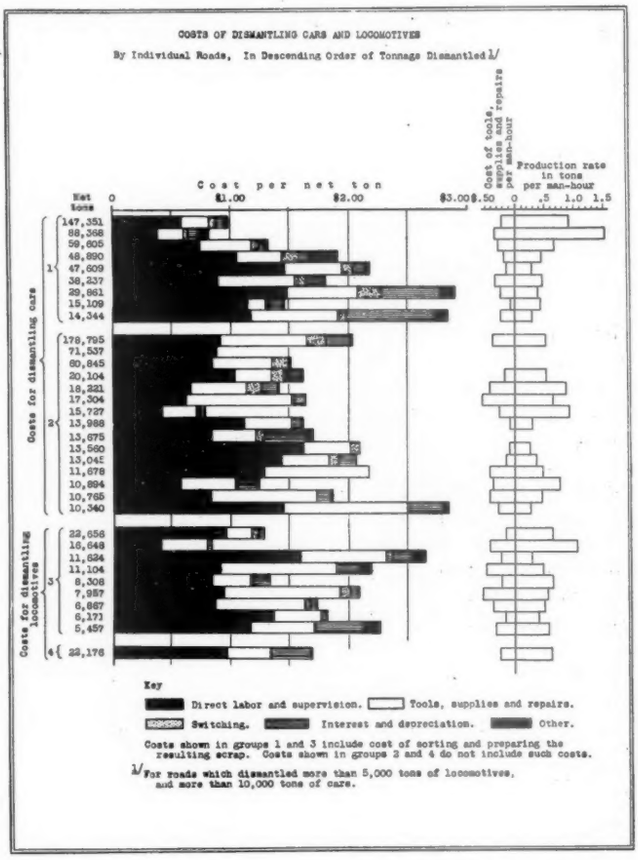
Roads with a production rate of approximately 0.85 tons per man-hour spent only about 6 cents per ton for tools, supplies and repairs, while those whose production rate was around 0.50 tons spent almost 25 cents. Some of the high values represent roads generally conceded to be the most efficient in their scrap handling operations. Tools, supplies and repairs, amounting to approximately 14 per cent of sorting plant costs, averaged 17.6 cents per equated ton handled. Switching incidental to the movement of scrap into and out of sorting plants averaged 7.7 cents per equated ton handled. The cost reported, divided by the actual tonnage, gave a cost per 42-ton car load averaging approximately $3.16 for the in-and-out movement. Interest and depreciation ranged from 1.0 cents to $1.219, and averaged 18.6 cents per equated net ton handled. The highest charges for these items are no doubt due to high investment in fixed equipment designed to handle a much greater tonnage than that handled in 1933.

Of the 69 roads reporting, 24 omitted to report taxes or explained that they could not be estimated. Only 30 of the 69 roads reported charges for fire insurance. For the roads reporting, it averaged 0.2 cents per net ton handled. Charges for personal injuries, reported by 13 roads, ranged from as little as $1 for the whole year of 1933 to a maximum of 7.3 cents per net ton handled.

Cost of Dismantling

Class I roads reported the dismantling in their own plants, with their own labor, of locomotives and cars containing 1,208,445 net tons of ferrous and non-ferrous metals. The total cost reported for this work was $1,941,128, or an average of $1.61 per net ton. Forty roads reported dismantling 1,631 locomotives, containing 152,611 net tons of metal, at a cost of $270,967, or $1.78 per ton. Sixty-eight roads dismantled 80,877 cars, containing 1,055,834 net tons of metal, at a total cost of $1,669,533, or $1.58 per net ton. These grand averages are the results of dividing the total reported cost by the total tons of metal in the equipment dismantled. They are, however, somewhat lower than the true average cost, for the reason that all roads did not report all items of cost. The averages for the individual cost items, relating solely to the tonnage on which they were incurred, total $1.83 and $1.64, respectively, for locomotives and cars, an increase of six cents per ton in each instance.

The low average cost for dismantling locomotives is explained


COSTS OF DISMANTLING CARS AND LOCOMOTIVES
By Individual Roads, In Descending Order of Tonnage Dismantled 1/
Cost per net ton
$1.00
$2.00
$3.00
Net tons
Cost of tools, supplies and repairs per man-hour
$.50
Production rate in tons per man-hour
.5
1.0
1.5
Costs for dismantling cars
Costs for dismantling locomotives
Key
Direct labor and supervision.
Tools, supplies and repairs.
Switching.
Interest and depreciation.
Other.
Costs shown in groups 1 and 3 include cost of sorting and preparing the resulting scrap. Costs shown in groups 2 and 4 do not include such costs.
1/ For roads which dismantled more than 5,000 tons of locomotives, and more than 10,000 tons of cars.

Comparative Costs of Dismantling Equipment on Various Railroads

in part by the fact that most of the resulting 152,611 net tons of scrap was not prepared to any great extent.

Average total costs per net ton on individual roads ranged from 33 cents for cars and 84 cents for locomotives to $5.58 and $4.81, respectively. There was no definite relationship between tonnage dismantled and cost.

Labor, the largest single item of expense, averaged approximately 55 per cent of the total cost of dismantling. The variations in labor cost per ton are so great that great differences must be assumed to exist in physical operations performed or in efficiency. Man-hour costs varied from 20 cents to 72 cents per ton and labor costs from 26 cents to $3.58 per ton. The approximate average man-hour wage for dismantling cars was 48.3 cents, the average wage cost per ton 89.9 cents, indicating an average production rate of about 0.49 ton per man-hour. Man-hour cost for locomotive dismantling was approximately 51.3 cents per ton, with labor cost per ton at $1.021, indicating an average production of about 0.50 ton per man-hour.

The average cost of tools, supplies and repairs used in dismantling locomotives was 56.4 cents per ton, including preparation, and 47.6 cents per ton, not including preparation. On the other hand, the reverse is true of the reported cost for this item at car dismantling points, where the averages were 44.3 and 75.1, respectively.

Switching incidental to the movement of equipment to be scrapped into and out of dismantling plants is a cost which, in many cases, is not charged against dismantling operations. For those roads reporting, switching costs averaged 9.6 cents and 3.9 cents per ton of equipment dismantled at car and locomotive plants, respectively. At car dismantling points, one road reported an average switching charge of 52.5 cents per ton; four roads reported from 30 to 24 cents; five roads from 21 to 17 cents; and 30 roads from 13 to ½ cent. At locomotive dismantling points, one road reported 30.9 cents; the remaining 22, charges from 10.7 to ½ cent. Only one road reported a charge against dismantling for demurrage. It amounted to only $17, less than one-tenth of a cent per ton.

Interest and depreciation together averaged 14.3 cents per ton of cars dismantled, and 18.9 cents per ton of locomotives dismantled. Only about half the roads reported taxes. Fire insurance was reported by still fewer roads. Only one road reported a charge for renting facilities. Charges for personal injuries, including compensation insurance premiums, were reported by only 10 roads at car dismantling points, and six roads at locomotive dismantling points.

Dismantling Under Contract

During 1933, 3,140 cars and 240 locomotives were dismantled for Class I roads by other than railroad forces, the ownership of all resulting scrap having been retained by the roads. The cost of dismantling cars amounted to $77,080 or $1.61 per net ton of metal parts. The locomotives were dismantled for $58,867 or $1.85 per net ton of metal parts. In 5 of the 10 cases, the dismantling of cars was done as a relief measure for employees, who received the wood therefrom in exchange for their services.

Equipment Sold on Wheels

During 1933, the Class I roads sold, in most cases as scrap, 18,510 cars and 535 locomotives on wheels without reservation of right to repurchase or retain any parts. The cars, metal parts of which weighed 231,757 net tons, brought $1,504,867; $6.49 per net ton, or $81.30 per car. The locomotives, metal parts of which weighed 47,541 net tons, brought $299,390, $6.30 per net ton, or $559.61 per locomotive. Cars sold for as little as $2.27 per net ton of metal, and as much as $20.33. The range for locomotives was from $2.93 to $26.67 per net ton. If they could have received average prices per ton and have been dismantled for average costs, the roads which sold their equipment on wheels lost $92,909, exclusive of the value of any usable material that might have been recovered.

Equipment Sold Under Agreements

During 1933, Class I roads sold 20,397 cars and 197 locomotives under various agreements whereby certain material was retained, repurchased or returned. The money received for cars totaled $1,366,281, or $5.10 per net ton of metal, or $66.98 per car, while the roads received $89,506, or $5.55 per net ton, or $545.35 per locomotive. Assuming that the roads could have used the average prices per ton, and dismantled for the average costs, they lost through these transactions $344,123, not including any amounts paid for the material retained, repurchased or returned.

Usable Material Recovered

During 1933, Class I roads sorted and prepared at sorting plants approximately 1,404,437 net tons of scrap, from which they recovered $8,211,976 worth of usable material at the value of new material, or an average of $5.85 worth per ton handled. It was estimated that $1,847,597 worth of this material, or 22 per cent, was fit for use without repair.

At dismantling plants, during 1933, Class I roads dismantled equipment containing 1,251,547 net tons of ferrous and 15,574,446 lb. of non-ferrous metal parts. About 20 per cent of the ferrous and 23 per cent of the non-ferrous materials was recovered as usable. Usable ferrous material weighing 251,481 net tons was valued at $15,292,983, or $60.81 per net ton. The value of 3,564,462 lb. of non-ferrous metal parts recovered was set at $643,093, or 18 cents per lb. It was estimated that about 57 per cent by value of the ferrous material was fit for use without repairs. Dividing the total value of the material recovered by the total tonnage dismantled shows that the roads recovered approximately $12.65 per ton of equipment dismantled. The percentage of locomotive material recovered was considerably lower than that of car material.

Classified scrap was hauled an average of 155 miles, cars 294 miles and locomotives approximately 215 miles. Similar data were not secured for classified scrap shipped direct from point of origin, or for equipment sold under various agreements, but can be estimated fairly accurately on the basis of the known averages.

Employment

The sorting and dismantling operations of Class I roads employed approximately 4,620,868 man-hours of direct labor of all kinds, and of supervisory labor, during 1933. The total cost of this employment was $2,141,792, or an average of 46.3 cents per man-hour. Based on a year of 50 weeks of 48 hours, 4,620,868 man-hours is the equivalent of 1,925 full-time year-around employees. On the basis of 170 man-hours per month, used by the Department of Labor, 2,265 full-time employees would be required.

Conclusions and Recommendations

Many classes of scrap regularly sold by the railroads must be further prepared by either the scrap dealers or the consumers before they are ready for use. These classes bring prices correspondingly lower than the standard grade of railroad scrap, which is ready for the consumers' use. In most instances, the prices received are so low as to permit the roads to spend the necessary cost of completing preparation and still realize a larger net return per ton of scrap. For example, Class I roads sold 642,496 net tons of 15 different classes of ferrous scrap, 500,828 net tons of which it is estimated could have been converted into heavy melting steel. If this tonnage had been converted and sold at the average price received for melting steel during 1933, the gross return would have been increased $1,306,489. After deducting the cost of conversion, which is estimated to be approximately $1.50 per net ton, or $751,234, there would have remained a net increase of $555,255.

Comparison of the return received for scrap equipment sold on wheels, and under various agreements concerning the return and repurchase of parts therefrom, shows that in general the railroads lost money on such transactions. In-so-far as this loss is unavoidable because of the lack of adequate facilities for dismantling on any road or group of roads, investigation should be made into the possibilities of joint dismantling.

Uniform Accounting and Detailed Costs

The great differences in the average costs reported by the roads for handling scrap and dismantling equipment are due principally to actual differences in the amount of work performed per ton handled or dismantled, to differences in accounting for the costs, or to differences in efficiency. It is evident from an examination of the detail figures reported that variations in labor rates can account for very little of the difference. Variations in accounting are evident, as is illustrated, for example, by the charges for switching, which could not vary in actual cost as much as is indicated by the returns. The results of the survey clearly indicate that comparable average costs cannot be obtained merely by dividing the total cost by the number of tons handled. However, they can be obtained if proper weight is given to differences in actual work performed, but only after uniform accounting practices have been set up.

It is reasonable to suppose that economies could be effected through consolidation of scrap handling by individual roads, through the elimination of duplicated facilities, as well as through reduced supervisory expense and many other benefits, of mass production methods. For similar reasons, it seems desirable that scrap handling and dismantling operations be combined. It is obvious that the forwarding of scrap, cut sufficiently to load, from dismantling plants to scrap sorting plants involves an extra loading and unloading, and duplication of certain handling equipment at both points. Further, actual cost data indicate much higher costs per ton in cases where the dismantling is done at one plant and the sorting and preparing at another, than where the two operations are carried out at the same plant.

During 1933, Class I roads sold approximately 29 per cent of all classified ferrous scrap direct to the ultimate consumer. If all classified ferrous scrap had been sold at prices paid by

the consumers the return would have increased approximately $1,600,000. It is natural that the railroads should receive a higher price for scrap sold direct to the consumers because such sales eliminate unnecessary intermediate handlings. However, the differences in price are not as great as would be expected, considering the cost of such extra handlings. A comparison of the prices paid for pig iron and heavy melting steel No. 1 shows that for a long period of years these two raw materials were close in price but that since 1917 scrap prices have been considerably lower than pig iron prices. From this, it would appear that the railroads have not realized on their potential advantages as the largest single producing unit of high quality scrap to maintain the market value of their output.

Central Agencies

The economic benefits of dealing directly with consumers have long been realized by the railroads, but the practical obstacles to such dealings on the part of individual roads have been that no one road could originate sufficient tonnage to meet fully the demand of any single consumer, nor could they generally dispose of all grades of scrap to the same buyer. Under such circumstances consumers would be placed in the embarrassing position of having to rely on dealers, otherwise excluded, for such emergency demands as might arise, and the roads would be placed at a disadvantage in having to market through dealers such small quantities of low-grade scrap as the large consumers would not wish to buy. These obstacles can be overcome by the establishment, by the railroads, of a few central agencies for the purpose of marketing all railroad scrap. The number of such agencies should be as small as is consistent with the adequate servicing of the several markets, so that each agency may have the bargaining power of large tonnage operations. With the opportunities for forecasting production and the possibilities of co-operation between the agencies, there should be ample flexibility in such an arrangement to meet emergency demands. Whereas individual roads might fear to negotiate separately with the consumers for better prices, or might hesitate to sell the bulk of their scrap directly to consumers, for fear of reprisals in the form of reduced traffic, a central marketing agency would not be hampered by such considerations.

Concentration of Operations of Two or More Roads

The facts at present available do not indicate conclusively that large scale operations are, without exception, more economical than small operations. On the other hand, the majority of the most striking instances of excessive investment in facilities per ton handled occur among the smaller operations. It will be recognized that minimum equipment investments quickly become exorbitantly high when small operations are halved by economic slumps. A striking commentary on the economy of railroad scrap handling in the many scattered plants is the fact that a small number of employees, if regularly employed, could handle all the work alone. It is not reasonable to suppose that the work can be done as efficiently with labor sporadically employed as it could be were it concentrated into economical units, carried out under systematic planning, and with labor steadily employed, properly trained, and practiced in the performance of their duties.

Perhaps the most serious obstacles to centralized scrap handling are the foreign-line freight charges involved, the setting up of proper charges for dismantling and for sorting and preparing scrap, and arranging to return to the originating road usable material recovered. The freight charges would cover such foreign-line movement as was necessary to move the scrap and equipment from the line of the originating road to the central plant and from there to the market. This would not be more than the scrap must bear now, if the central plants were located in the direction of movement from point of origin to markets. Studies should be conducted, if only for the better control of individual operations, to establish costs of performing various kinds of work and these would serve as a starting point for the development of approximate charges. Concentrated large-scale operations would offer the greatest possible opportunity for the accurate determination of costs and necessary adjustments could be made quickly. Arrangements for returning to originating roads such usable material as they desire should offer no insurmountable difficulty.

Signaling as a Factor in Railway Operation

(*Continued from page 10*)

on the investment, to a minimum of $33,000, representing a return of 7.7 per cent on the investment.

3. The average annual return on 16 installations amounted to 42.8 per cent on the capital investment.

4. The average cost per car handled before the retarders were installed was 80 cents and afterwards 52 cents, representing an average saving of 28 cents.

5. Four of the yards reported that the installation of the retarders had resulted in eliminating switching at other points, with savings ranging from a maximum of $192,000 to a minimum of $15,000 a year.

6. In three of the yards, the average number of cars handled in 24 hours varied from 768 to 900, but with such a comparatively small amount of traffic, the savings were equivalent to a return of 37.8 to 69 per cent on the capital investment.

These results and later studies show that it is not necessary to have a large volume of business for car retarders to pay their way, and the results so far experienced indicate that they are of great benefit in modern yard operation.

Automatic Train Control and Cab Signals

As of January 1, 1935, there were about 20,000 miles of track and 9,200 locomotives equipped with automatic train control devices on 40 railways, of which about 7,800 miles and 4,520 locomotives were equipped with continuous cab signals on 20 railways. Since 1928, voluntary installations of continuous cab signals have been made on more than 1,300 track miles and 1,100 locomotives. The railway mileage now equipped with automatic train control and continuous cab signals comprises some of the heaviest traffic through-passenger routes. These devices are increasing the safety of train operation, they facilitate on-time performance under unfavorable weather conditions, and they are being used on the majority of high-speed trains recently placed in service on a number of railways.

Signaling for Higher Train Speeds

The advent of the streamline high-speed train and higher freight train speeds is bringing to the attention of railway men many new problems in railway signaling and operation. The speed of trains has been gradually increased from the former days when 40 to 50 miles per hour was the maximum until today when 80 to 90 mile passenger train speeds and 50 to 60 mile freight train speeds are not uncommon. The increased length and tonnage of freight trains have further increased the braking distance and made it necessary to consider the replacing of antiquated types with modern signals or providing proper indications with an increased number of signal aspects. Many railways have increased the safety of train operation and facilitated train service by replacing two-indication signals with three-indications, or replacing three-indication signals with four-indications, as multiple-aspect signals afford the only satisfactory solution to the high-speed braking problem where short blocks necessitate the overlapping of the approach indication. Many railways are substituting modern light signals for the older type semaphore signals, as the light signal aspects are readily seen and interpreted and, in addition, the changes of aspect in light signals are instantaneous and occur directly as track conditions permit. The introduction of high-speed trains has also brought about the more general use of modernized grade crossing protection.

Recent Equipment Developments ...

Mechanical Lubrication for Air Compressors

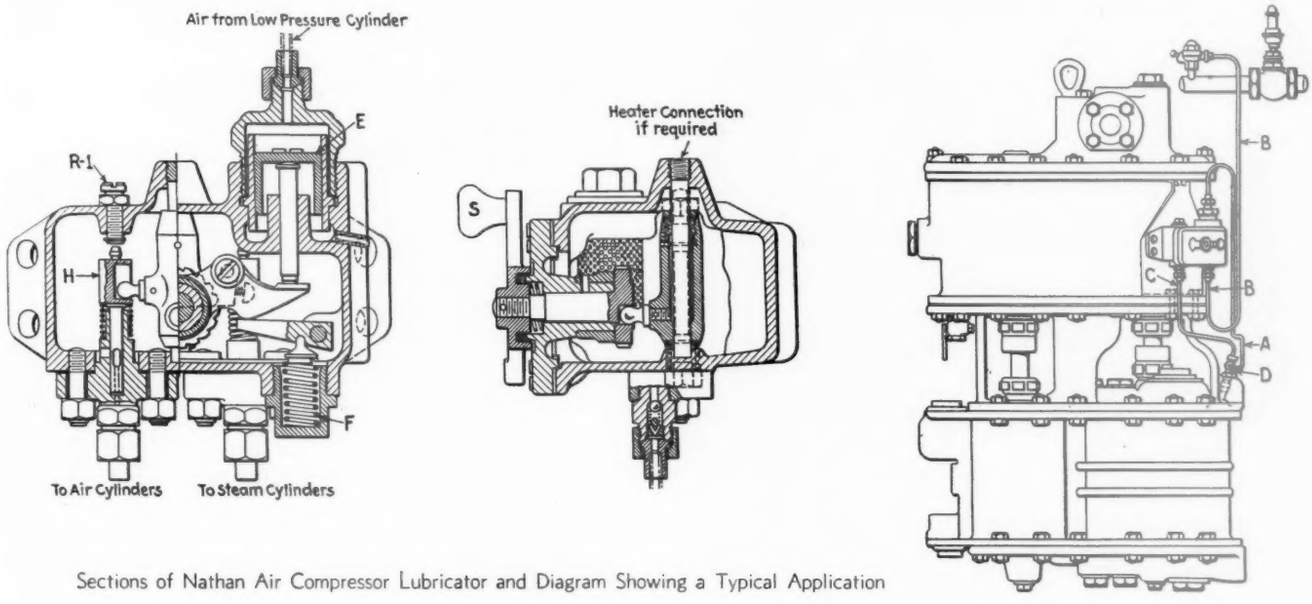
THE Type LB mechanical lubricator here illustrated has been developed by the Nathan Manufacturing Company, New York, to lubricate properly both the steam and air cylinders of locomotive air compressors. The amount of oil delivered is controlled by the speed of the air pump and, when the pump stops, the oil feed stops. Over-lubrication is thus eliminated as well as under-lubrication.

The lubricator is a self-contained device attached to and in contact with the side of the steam cylinder of the air pump in such a manner that heat is conducted from the cylinder wall to the lubricator. Its motion is derived from the pulsations of the air pressure in the low-pressure air-pump cylinder. Pipe *A* connects the air cylinder to an inlet on top of the lubricator where the pressure pulsations act upon a small piston *E* which is pressed downwardly by the air pressure during the compression stroke and returned to its original position by a spring *F* during the suction stroke of the piston in the air-pump cylinder. This movement of the small piston is controlled by lever action and actuates a ratchet mechanism and a sliding shaft which imparts a reciprocating and oscillating movement to two oil pumping units one of which is marked *H* on the drawing. The two pumping units are valveless and open and close by their oscillating movements inlet and outlet ports, similar to the units used in the Nathan type D.V. lubricator. The discharge from one of the pumping units is connected by pipe *B* to a terminal check located in the air-pump steam line, while the other unit is connected by pipe *C* to the low-pressure air cylinder. A combination special fitting, *D*, screwed into the low-pressure air pump cylinder serves the two-fold purpose of connecting the air pipe for actuating the lubricator and receiving the oil for lubrication of the air end of the pump.

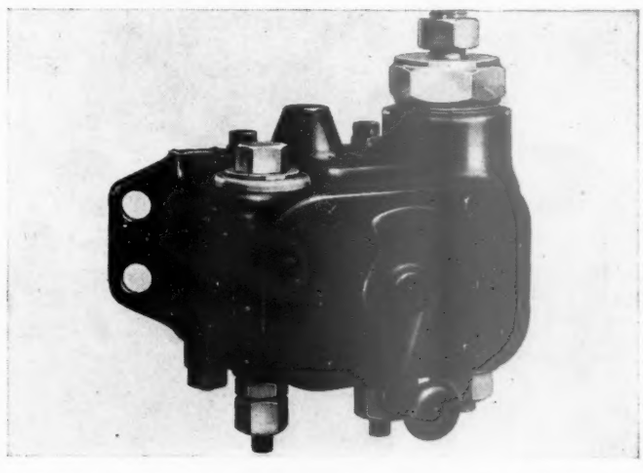
The amount of oil to be delivered by the pumping units can be regulated by adjusting screws. One of the screws, *R-1*, is shown in the illustration; the other, which is not shown, is in line with the oil outlet to the steam cylinders. A crank handle *S* is provided for filling the oil pipes. It also indicates the movement of the lubricator.

The Type LB lubricator automatically lubricates the air as well as the steam end of single or cross-compound air compressors. In compound air pumps a sufficient amount of oil is carried over from the low-pressure air cylinder to lubricate properly the high-pressure cylinder.

The advantages of a lubricator operated by the movement of the air pump itself are obvious. When an engine arrives at a terminal, in nearly all cases it stands on the ash pit for at least one hour, and many times two hours or more, waiting to be serviced and put in the house. During this period the air pump is



Sections of Nathan Air Compressor Lubricator and Diagram Showing a Typical Application



The Nathan Type LB Lubricator for Locomotive Air Compressors

operating to maintain pressure and, while doing so, receives from the LB lubricator oil exactly in proportion to its speed. When the pump is started and runs at high speed ample lubrication is necessary.

This lubricating system eliminates the cost and maintenance of long pipe lines, the few feet of pipe required being accessibly located and readily inspected. It provides a dependable means to effect correct lubrication, resulting in economy of oil, lower compressor maintenance, longer service between shoppings of compressors and fewer air pump failures.

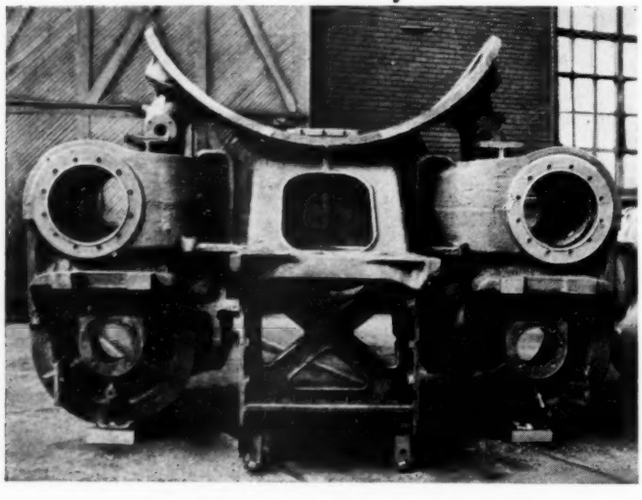
Steel Cylinder Casting of Unusual Design

THE illustration shows a one-piece steel locomotive cylinder casting, which is made of medium-carbon high-tensile steel and weighs about 24,000 lb. finished, or approximately 20 per cent less than equivalent cast iron cylinders. This cylinder casting, produced by the Locomotive Finished Materials Company, Atchison, Kan., is thoroughly annealed, after being cast, to assure freedom from internal stresses. It combines in a single casting both cylinders, valve chambers, cylinder saddle, steam-pipe connections, integral back cylinder heads, guide brackets and frame cross tie.

One of the distinguishing features of the casting design is that the exhaust-passage walls are independent of the structural walls which carry the stresses from the cylinders to the main locomotive frames. This construction minimizes the possibility of casting failures in the zone where they usually occur, namely on a line between the cylinder and saddle-arc centers. The removal of structural stresses from the exhaust passage walls, which are free to expand or contract under extreme temperature variations, tends to prevent the development of cracked walls with resultant steam leaks.

The provision of integral back cylinder heads eliminates the possibility of leaks which frequently occur with the conventional bolted construction, due to the stretching of bolts under the heavy thrust of crossheads on the guides which are anchored to the back cylinder heads. The importance of eliminating back cylinder-head leaks is emphasized by the high cost of repairing this defect which makes it almost a major operation. For example it may cost as much as $600 to repair a leaky back cylinder head of conventional bolted construction when it is considered that rods must be removed, the front pair of driving wheels dropped, crossheads, pistons, guides and cylinder head taken down. The cylinder-head studs must also be taken out in order to permit regrinding the joints and all of these parts reassembled in the reverse order. The provision of integral back cylinder heads is designed to prevent this costly maintenance work.

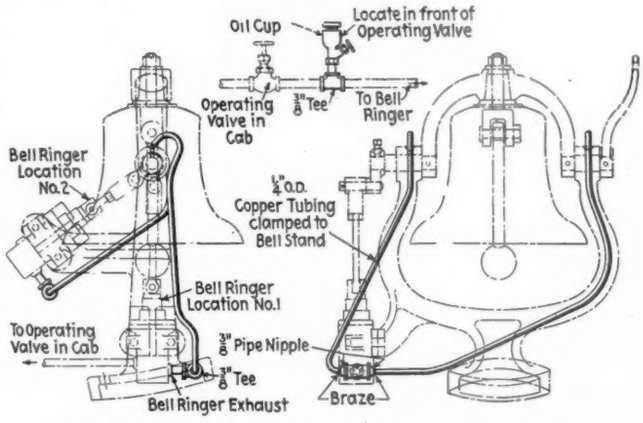
With front engine trucks already loaded to maximum capacity, the provision of an unusually light cylinder casting, such as the one illustrated, permits the location at the front of the boiler of such auxiliary equipment as feedwater heaters, air pumps, etc. (which cannot be located longitudinally on the boiler due to clearance restrictions), without exceeding engine-truck weight limits.



One-Piece Steel Locomotive Cylinder Casting, with Independent Exhaust Passage Walls, Made by the Locomotive Finished Materials Company

Lubricating Device for Bell Ringers

BELL ringers are always subject to more or less trouble due to the lack of lubrication at the trunnion points. Even though the bell trunnions may be well lubricated before the locomotive leaves the terminal, it is frequently found at the conclusion of the trip that the bell will not ring because the oil has either become solidified in cold weather or has flowed away in warm weather. In addition, the oil holes in the trunnion bushings are often found to be plugged up or filled with cinders.



Staley Method of Lubricating Bell Ringer and Bell Shaft

With the arrangement shown, which was designed by Frank L. Staley and is in use on an eastern railroad, it is possible for the engineman to lubricate the bell ringer cylinder and the trunnion bushings while the locomotive is in motion and without leaving his usual position in the cab. In addition to this feature the application does away with the necessity of climbing to the top of the boiler at any time in order to apply lubrication.

The arrangement, which has been patented in the United States and Canada, employs a combined air-pressure valve and a specially designed oil cup which is located in the cab, the valve and cup being placed in the air line between the operating valve and the bell ringer as shown in the drawing. From the exhaust port on the bell ringer cylinder there are two small exhaust pipes running to the bell trunnions and into which the lubrication is forced.

In operation, as the air valve is opened, the oil feed

is also opened at the same time. The oil then becomes atomized and is carried along with the air to the inside of the bell ringer and then exhausted directly to the trunnion bushing oil holes. This arrangement not only prolongs the life of the bell ringer cylinder itself, but also the trunnion bushings.

On modern locomotives the air line to the bell ringer is usually carried underneath the jacket and, as a consequence, this line is kept warm. The Staley device takes advantage of this location of the air line, using the heated air and atomized oil to keep the bell trunnions thawed out and properly lubricated in the coldest weather.

Hand Brake Chain Connection

AN economical form of hand-brake chain connection to the hand-brake rod, known as the Apex hand-brake chain adjuster, has recently been placed on the market by Apex Railway Devices, 310 S. Michigan avenue, Chicago. This adjuster, made of malleable iron, is 7½ in. long, 3 1/16 in. wide at the mouth, and 1 5/16 in. at the lips of the jaw. The link inside the jaw rests on a ledge and is secured from dislodgment by a ½-in. bolt passing above it. There is no strain on the bolt, for the center line of pull on the jaw is well below the bolt. In addition, the jaw is reinforced at that point taking the stress by a strap passing across the lower

The Apex Hand-Brake Chain Adjuster

portion. The strength of the connection is said to be nine times greater than the safe working load of the brake chain.

The Apex adjuster is designed to furnish the railroads with an economical medium for maintaining the proper brake chain length throughout the life of a freight car. The adjusters are manufactured in six different types to fit all applications on new or existing equipment.

Feedwater Strainer and Coupler

THE Consolidated Ashcroft Hancock Company, Inc., New York, has recently placed on the market a strainer and coupler for locomotive feedwater lines. The body of this strainer and coupler, shown in the illustration accompanying this article, is of semi steel;

Hancock Angle-Inlet Feedwater Strainer and Coupler

the inlet and yoke, of malleable iron; the strainer, of brass; and the hose clamp and latch, of bronze. The area of the opening through the strainer is 15 sq. in., for both the No. 6 and 7 sizes in which this coupler and strainer is made. The No. 6 size has a threaded opening for 2½-in. standard pipe size and an inlet for 3-in. hose, while the No. 7 has 3-in. standard pipe threads at the outlet and the inlet is designed for 3½-in. hose. The bottom part of the strainer drops into and slides in a groove. The upper part is pushed into position and hammered around to the left or right as is most convenient, and the resultant wedging action holds the two parts together firmly. After this has been done the latch is thrown over into a groove which prevents the yoke from working loose due to jars or vibrations. The only tool necessary for coupling or uncoupling this strainer is a hammer, and the operation may be accomplished from either the right- or left-hand position.

Cork and Rubber Ribbon for Setting Glass

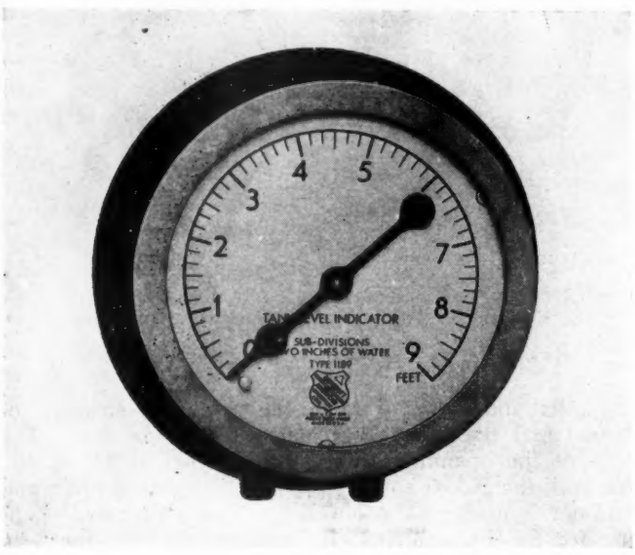
A CORK and sponge-rubber ribbon, CS-4, has been developed by the Armstrong Cork Company, Lancaster, Pa., to be used as a glazing strip for setting glass in steel channels. Where a double sash is used in modern passenger cars, it is imperative that the glass be set properly so that correct temperatures may be maintained in the air-conditioned interior. Since this product is made with an adhesive back, the glazer or

sash manufacturer can quickly apply it to the steel channel and insure the necessary stationary position while the glass is being applied.

By processing the sponge-rubber ribbon with cork in the voids, the oxidation of the glazing strip takes place over a much longer period of time and the necessary resiliency is maintained to prevent any breakage of the glass due to normal shock.

Locomotive Tank-Level Indicator

ONE of the recent developments of the Consolidated Ashcroft Hancock Company, Inc., New York, is the Ashcroft American tank-water-level indicator shown in the illustration which eliminates the necessity of an engineman leaving the cab to measure the



The Ashcroft American Indicator for Showing the Level of Water in Locomotive Tenders

water level in the tender. This indicator shows on the dial in the cab the height of the water in the locomotive tender in feet. The engine crew is able to determine at a glance how much water remains in the tender and unnecessary water stops may at times be eliminated by the definite knowledge of the water level. The indicator is mounted on the boiler head.

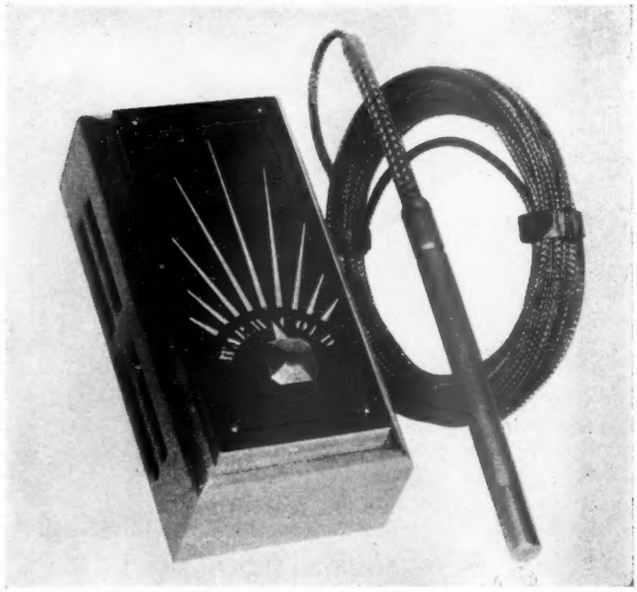
This tank-level indicator has a gage which is sensitive to change in liquid level, the sensitivity resulting from a bellows type construction. Any slight change of pressure causes the bellows to expand and this movement is multiplied by the gage movement. The indicator has a 5-in. dial and is graduated from 0 to 9 ft. with 2-in. divisions. The variation of a single inch in water level may be detected. The indicator case is of iron with a threaded cast bronze ring of non-glare finish. The gage pointer is heavy enough to eliminate fluctuations caused by vibrations.

The indicator has two connections, one of which is marked "tank" and the other "air" for connection to the line to the tender and to the air supply, respectively. As air enters the system it passes through a strainer and a filter. From the strainer the air passes through a capillary tube into the outlet connection and then back into the tender where it exhausts up through the water, the exhaust of air from the pipe near the tender bottom being resisted by the weight of the head of water. This same resistance or pressure exists at the indicator outlet connection. This connection is by-passed through capillary tubing to the bellows so that the pressure in the bellows is the same as that which exists at the end of the pipe in the tender. The bellows thus expands or contracts according to changes in the liquid level and causes the hand of the gage to indicate the water level in the tank.

Differential Thermostat for Air-Conditioned Coaches

IN order to meet the requirements for temperature control in air-conditioned coaches the American Schaeffer & Budenberg Division, Consolidated Ashcroft Hancock Company, Inc., Bridgeport, Conn., has recently placed on the market a differential thermostat used for controlling automatically the indoor temperature of railway coaches at a temperature which provides the greatest comfort for any given outdoor temperature. It is equipped with an outdoor bulb or element which serves to move the control point to provide the proper indoor temperature. It is applicable to both heating and cooling. One model requires the turning of a simple hand switch to change over from cooling to heating. Another model is provided with an automatic change-over device.

To obtain the differential temperature control this thermostat is equipped with two thermometric systems, one affected by indoor temperature and the other by outdoor temperature. The indoor system is formed by a bi-metallic strip. The outdoor system consists of a vapor pressure actuated capsular diaphragm with capillary ex-



Thermostat for Air-Conditioned Cars with Manual Change-Over Switch

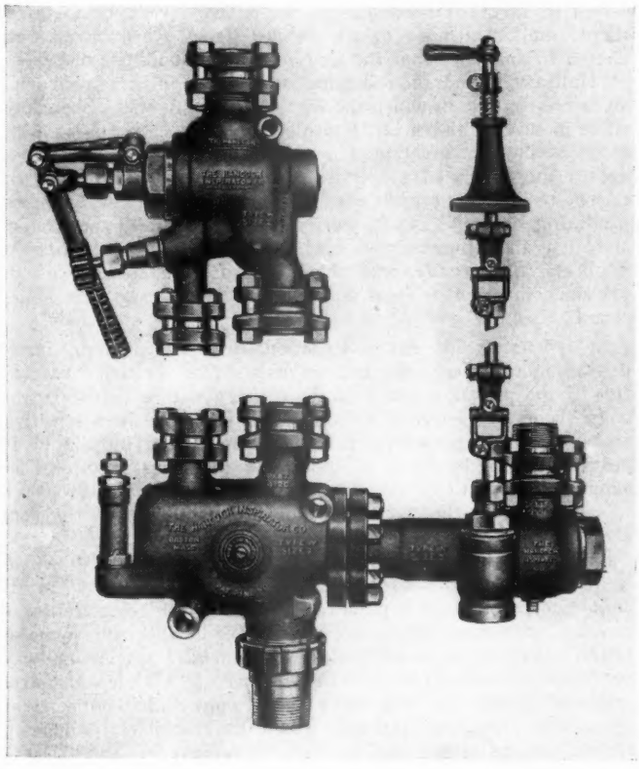
tension tubing and bulb. The bulb only is located where it is subjected to outside temperature. This themostat is designed so that it makes contact only and never breaks it, which contributes to long contact life by minimizing the arcing which burns the contacts. The thermostat is of vibration and shock-proof construction and

is contained in a casing requiring a mounting space of 3¼ in. by 7 in. on the car wall. The model illustrated is built with a hand switch for changing over from cooling to heating as the outdoor temperature demands.

Non-Lifting Locomotive Inspirator for High Pressures

THE illustration accompanying this article shows the Hancock Type W non-lifting inspirator recently developed by the Consolidated Ashcroft Hancock Company, Inc., New York. This inspirator has been designed to the meet the requirements of modern high-pressure locomotives. While the Type W has been designed especially for use at the higher steam pressures (up to 500 lb.), it is also entirely suitable for use with the lower steam pressures in general use. Among the advantages claimed for this type of inspirator are longer life with lower maintenance costs, better regulation, and a broader capacity range; the ability to handle suction water at higher temperatures, and the fact that it delivers water at higher temperatures to the boiler and delivers all of the water to the boiler.

For working pressures up to 300 lb. the Type W inspirator is made of Hancock bronze and, for pressures from 300 to 500 lb., of a special Hancock nickel bronze alloy. The delivery tube is made of heat-treated stainless steel which, it is said, will give four to five times the length of service of a bronze tube. The different

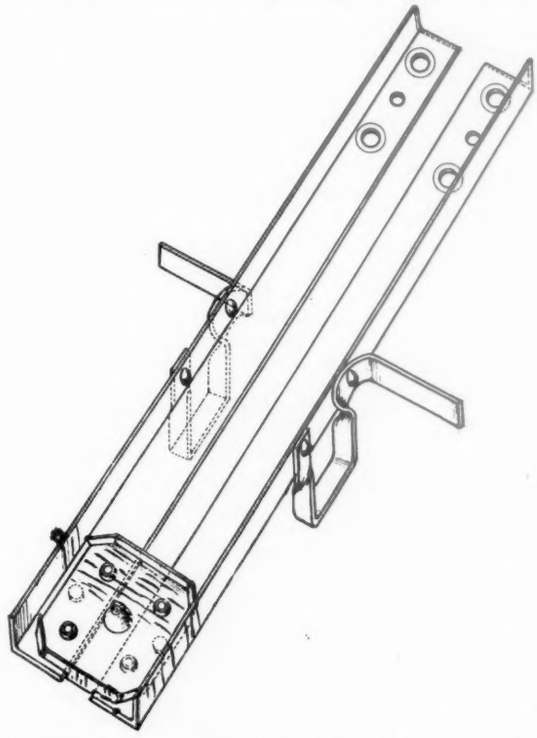


The Hancock Type W Non-Lifting Inspirator for High-Pressure Service

sizes of Type W inspirators tubes and nozzles have water capacities of from 2,800 to 8,500 gallons per hour at 200 lb. pressure; from 3,000 to 9,000 gallons per hour at 250 lb. pressure, and from 3,300 to 9,500 gallons per hour at 500 lb. pressure.

New Flexible Spring Plank

THE General American Tank Car Corporation, Chicago, Ill., has developed and recently standardized on a new type of angle-iron spring plank, which tests have shown will have longer life and better resistance to corrosion than types previously used, espe-



Flexible Spring Plank Recently Adopted As Standard by General American

cially for refrigerator car service. This new spring plant, together with the spring plates, forms a replacement unit for the conventional A.A.R. design.

The General American spring plank consists of two special drop-forged spring plates and two angle irons. The spring plates are provided with two depending bosses which engage in holes in the angles. The angles in turn are punched to take standard A.A.R. bosses in the side frames. The combination, working together, provides a spring plank which, because of the two independent angles, permits considerable relative motion between side frames without imposing heavy stresses on the spring plank itself.

The drawing shows the spring plank provided with the A.A.R. Plan 3 brake-beam safety and bottom-rod support. Any other type of brake-beam safety support can be used providing the design is such as not to restrain the free action of the angles.

AN EXTENSIVE SCHEDULE of summer vacation fares is available for travelers to mountain and seashore resorts on the Norfolk & Western and between other points on its lines and to destinations throughout many sections of the country and Canada. The schedule includes reduced week-end rates between all stations on the railway and to destinations in the southeast and east; 30-day round-trip tickets from Virginia and North Carolina stations to destinations in Illinois, Indiana, Kentucky, Michigan, Missouri and Ohio; low round-trip fares from N. & W. stations to all principal resorts throughout the United States and Canada; and 16-day vacation fares from Cincinnati, Columbus and other Ohio points to the Virginia seashore.

New Books . . .

Spenders All, by Ernest Greenwood. 234 pages, 7½ in. by 5 in. Bound in cloth. Published by the D. Appleton-Century Company, New York. Price $2.

This is an attempt "to hold up to the average citizen, John Public, a picture of his own tax situation, for no other reason in the world than to prove to him that he must be vitally interested in the subject and should carry this interest with him to the polls." With the foregoing in mind the author has proceeded, in fast-moving newspaper style, to show what enormous amounts are collected in direct and indirect taxes and disbursed by "our 500,000 government spending agencies"—something like 30 cents of every dollar the average man spends goes to pay taxes of some kind, he says.

Mr. Greenwood tells, for example, how the post office is rendering banking and express services at a loss; how the government turned over to the Federal Barge Line "$12,000,000 in property and $12,000,000 in cash—$24,000,000 in all" and then "spent $100,000,000 of the taxpayers' money to provide the barge line with a navigable right-of-way for which it pays nothing;" and how this barge line, competing with the railroads, has after eight years of operation shown "no profit whatever to say nothing of the fact that it pays no taxes." Then there is the chapter entitled "John Public Pays the Freight" which considers the proportion of railroad revenues absorbed by taxes. What he finds to be the fact in this connection "doesn't sound reasonable" to Mr. Greenwood, i. e., that "The railroads are told to keep up their standards of service with less money and, at the same time, pay the government more money for the privilege of serving the public."

Other similar situations could be cited from the many which the author has brought to light in dramatic fashion—all supporting his closing chapter's admonition that, "Only by eliminating the Santa Claus idea of government from the minds of the American people, with that government doing everything for everybody at no cost to anybody, can some order be brought out of chaos; failures recognized as failures and solutions substituted for post-mortems."

Railway Nationalization in Canada, by Leslie T. Fournier. 358 pages, 9 in. by 5¾ in. Bound in cloth. Published by the Macmillan Company of Canada, Ltd.—United States copies available through the International Finance Section, Princeton University, Princeton, N. J. Price $3.50.

Here is a dispassionate account of Canada's venture into government ownership and operation of railways—a venture which has given the Dominion its major financial problem—that of meeting interest on Canadian National securities, while at the same time it has intensified the competitive difficulties of the privately-operated Canadian Pacific. Generally speaking, Dr. Fournier's view is that of two aggressive railway managements able to command the ample financial resources required for large capital outlays and services designed to take business away from each other. During the prosperous years of the 'Twenties the Canadian National enjoyed the financial support of governments which passed its deficits with "sympathetic understanding," while the Canadian Pacific, in prosperous condition, was fully capable of maintaining its position, if not indeed keeping one step ahead of its government-owned competitor. The role of aggressor in this struggle the author attributes to the Canadian National but he nevertheless points out how, with post-1923 prosperity blinding all parties to the fundamental defects in Canada's railway set-up, "the result was the expansion of capital by both railways far beyond the point of economic reason."

Thus Canada's current railway problem which may be epitomized in a few figures. The gross deficit of the Canadian National from 1919 to 1933 inclusive has been $908,418,993 of which $479,025,804 is the deficit after interest on securities in the hands of the public; the remaining $429,393,189 represents the bookkeeping set-up of interest on loans from the government. In only two years—1926 and 1928—was there a surplus available for application to interest on government loans, and in both instances this surplus was less than 10 per cent of the government-loan interest requirements.

It is the author's opinion that heroic measures are required to extricate the Dominion from the financial consequences of its railway venture and he therefore recommends, as the only adequate solution, a plan which would provide for unified management of the two railways under private administration which is the solution favored by President Beatty of the Canadian Pacific. In leading up to this recommendation the book presents a comprehensive account of railway developments in Canada, considering in turn the forces leading to railway nationalization, the financial and operating results of the Canadian National as compared with those of the Canadian Pacific, the outstanding problems in relation to government ownership and future policy.

The analysis of comparative C. P. R. and C. N. R. costs draws attention to disparities which are called "greater than can be fairly explained by different operating characteristics," but in this connection it is not argued that the executives of the Canadian National are less competent than Canadian Pacific officers. Rather the author's contention is that, despite any "non-political" operating organization, "it simply is not possible to divorce the administration of the Canadian National from political influence or pressure, because voters will invariably exercise their displeasure against the government if it fails to interfere with railway policies which happen to meet their disfavor;" voters "are much more conscious of the railway service which is available to them than they are of the effects of railway deficits on their taxes." The Canadian Pacific, for example, offered a plan for the joint use of Windsor Station at Montreal but this was rejected in favor of the elaborate C. N. R. development started there; and a member of the cabinet from Nova Scotia was chosen to announce that the C. N. R. would build its own hotel at Halifax instead of following an original plan of acquiring an interest in one in which the C. P. R. had invested. Therefore, while in several places Dr. Fournier gives the C. N. R. management credit "for creating a smoothly functioning organization out of the disjointed properties which were combined to form the system," he nevertheless holds the opinion that the expenditures of the C. N. R. were out of proportion to its traffic; and that the government-owned road erred in attempting to duplicate and even exceed the standards and services of its private competitor without sufficient traffic to make that policy sound.

In bolstering his recommendation for amalgamation under private management, the author insists that Canada's railway sins of the past now confront the country with a condition and not a theory. Co-operative economies might have been effective, and competition preserved, had the former been introduced 10 years ago but the facts of today are that measures must be adopted which will introduce economies upward of $50,000,000 a year, or else, in the words of the Duff commission, "the very stability of the nation's finances, and the financial credit of the Canadian Pacific Railway will be threatened." Dr. Fournier, in this connection, finds the Duff report disappointing "in its failure to recommend a practical method of achieving the large railway economies which are required for adequate financial relief." Co-operative economies, he contends, provide no way out; from November, 1932, to the summer of 1934 such measures produced savings to both railways of only $1,250,000 whereas "even the Canadian National, which has consistently opposed unification, estimated the savings therefrom at $56,400,000."

And so, despite the current slogan "competition ever, amalgamation never," and the political inexpediency of joint operation of the C. N. R. and C. P. R., the author thinks that if there is not an early upturn in business, and if co-operative measures fail to bring adequate financial relief, "one of the political parties may be willing to assume the risk of giving the people of Canada an opportunity to vote for or against railway amalgamation."

NEWS

Signaling Statistics for 1935

Burt T. Anderson, 347 Madison avenue, New York City, representative of the Union and the General signal companies, has prepared a statement, as of January 1, 1935, containing the usual data compiled (but not published) by the Interstate Commerce Commission, showing the mileage of railroad in the United States equipped with automatic and non-automatic block signals; and, with this matter, some interesting tables and diagrams, covering a series of years, concerning progress in signal construction and maintenance, year by year, these being taken mainly from reviews published annually, in January in *Railway Signaling*.

The total length of road equipped with automatic block signals, on January 1, 1935, was 62,804 miles, a decrease of 61.5 miles from the preceding year, with an increase of 20.4 in the miles of *track*.

Non-automatic block signals totaled 47,563 miles, a decrease of 1,391 miles from the preceding year (decrease in miles of track 1,433). Total miles of railroad January 1, 1935, both kinds of signaling 110,367. The decreases shown in the record are largely due to reductions in traffic, resulting in temporary discontinuance of the block system. Miles of road now protected by light signals (for both day and night) totaled 22,677.

Total miles of road equipped for operation of locomotives with cab signals (with or without automatic train control), 3,829; miles of track, 7,762.

Total mileage on which automatic train control is in use, (with or without cab signals) 8,349; miles of track, 15,426; locomotives, 6,009; motor cars, 42. In addition, there are 1,891 miles of road (4,353 miles of track) over which are operated 2,462 locomotives and 687 electric cars, equipped with cab signals without A.T.C. The total of 8,349 miles includes 1,032 miles using cab signals. Three roads—the Santa Fe, the C. & N. W. and the Illinois Central—have taken out of service, on the lines using automatic train control, all wayside automatic signals.

Automatic interlocking installations are now in operation at 519 railroad grade crossing and 26 gauntlets, as reported by 80 railroads; and a statement excluding duplications in reports shows 310 crossings and 25 gauntlets.

Centralized traffic control now covers 1,261 miles of road, in which are 244 passing sidings, 965 switches and 2,585 block signals.

Remote control of switches is in effect on 697 single switches, 286 crossover switches; and the control includes 1,012 semaphore signals and 2,100 light signals.

A comparison of annual signaling construction, which shows the principal totals of work done in each of 10 years, gives a total for the whole period of 105,668 units. The heaviest year was 1930, and the smallest, 1934.

Data concerning mileage of automatic train control, automatic cab signals, remotely operated switches, automatic interlocking, electric train staff and automatic disk signals are given for each road.

A table setting forth types of power systems in automatic block signal installations shows for each year, 1925-1934, the miles of road and number of signals for each of the principal systems; A-C; A-C floating storage; straight primary; A-C floating with primary on track; A-C primary.

A notable feature of this pamphlet is a two-page map of the United States, showing each installation of automatic train control and each installation of cab signal operation, with the different types of apparatus indicated. The lines are colored to show those sections on which this improvement was established voluntarily by the railroads and also those where the apparatus was put in and operated for a time, but where operation has now been suspended by special permission of the Interstate Commerce Commission. Another interesting feature is a series of diagrams showing automatic cab signal aspects, with or without automatic train control; and cab signal indications.

Copies of this pamphlet may be had on application to Mr. Anderson.

American Welding Society

The American Welding Society will hold its fifteenth fall meeting in Chicago, Ill., September 30-October 4. Meetings of the society will be held in the Palmer House, State and Monroe streets.

Equipment Depreciation Charges Prescribed

The Interstate Commerce Commission has prescribed depreciation rates for the various classes of equipment for 102 additional railroads, following orders previously issued for 163 railroads.

I.C.C. to Investigate Oklahoma Intrastate Rates

The Interstate Commerce Commission, on petition of the railroads, has ordered an investigation as to the refusal of the Oklahoma Corporation Commission to permit or authorize increases in certain intrastate rates corresponding to those authorized by the federal commission in Ex Parte No. 115.

Hearings on Labor Bills

The sub-committee of the Senate committee on interstate commerce which has been holding a series of hearings on bills introduced at the request of the Railway Labor Executives' Association has heard testimony during the past week on S. 1562, the bill to amend the hours of service act, and planned to take up next S. 2511, the bill to provide for the inspection and investigation of conditions prevailing in train-dispatching offices, and S. 1288, providing for inspection of signal systems. The sub-committee has decided to postpone for the present consideration of S. 1518, the six-hour day bill, and S. 1630, the dismissal compensation bill.

The hours of service bill proposes to reduce from 16 hours to 12 hours the maximum for train service employees, from 9 to 8 hours the maximum for telegraph operators, and from 8 to 6 hours the limit for train dispatchers. The principal witness for the bill was J. G. Luhrsen, president of the American Train Dispatchers' Association, who contended that the work of dispatchers has been greatly increased in recent years and that the strain upon them is such as to shorten their lives and create conditions leading to accidents. He also said that many railroads had closed stations and required train crews to copy train orders without the counter-check afforded when the orders are handled by operators. Statements in support of the bill were also made by John T. Corbett, national legislative representative of the Brotherhood of Locomotive Engineers; Timothy Shea, assistant president of the Brotherhood of Locomotive Firemen and Enginemen; W. D. Johnson, national legislative representative of the Order of Railway Conductors, and J. A. Farquharson, national legislative representative of the Brotherhood of Railroad Trainmen. Mr. Corbett said that there is a lessening of efficiency after 12 hours of work which is not compatible with the necessity for good judgment and co-ordination and that many train assignments are such that it is a regular thing for the train crews to work nearly 16 hours because the overtime rules are such that punitive overtime is not paid so long as a speed basis of 12½ miles per hour is maintained. Mr. Johnson, however, said that the long hours are mainly required on the local and drag freight trains that make so many stops. He described a local run which he said ordinarily required 15 hours and 59 minutes and allowed the trainmen only about four hours a day of real rest.

T. B. Buckwalter, representing the Ohio Chamber of Commerce, appeared in opposition to the entire group of labor bills,

on the ground of the increased operating expense.

C. D. Peckinbaugh, general superintendent, Chicago, Burlington & Quincy, was the first witness on behalf of the railroads in opposition to the hours of service bill, which he said was unnecessary from the safety standpoint and would add at least $35,000,000 a year to the operating expenses of the railroads. This included $4,250,000 as a minimum for additional dispatchers, $13,000,000 for train and engine employees, and $18,000,000 for other additional employees and overtime. Discussing particularly the dispatching situation, he said that the train dispatchers have more favorable conditions than almost any class of railroad employees and that their work has been materially lessened in recent years by the increased use of the telephone, centralized traffic control devices, and increased automatic block signalling, as well as by the reduction in the number of trains.

The Administration plan to keep Congress in session until it passes a new tax bill in addition to the bills which were already on the President's "must" program has left an opportunity for further efforts on behalf of numerous bills which were generally assumed to have been already lost in the shuffle. One of the measures thus given a new chance is the revised railroad retirement plan of the Railway Labor Executives' Association, covered in two bills introduced by Senator Wagner and Representative Crosser. The Senate committee on interstate commerce has appointed a sub-committee to consider these bills consisting of Senators Brown, of New Hampshire; Wagner, of New York, and Hastings, of Delaware. Unless a separate pension plan for railroad employees is adopted they would come under the provisions of the social security bill, passed by both House and Senate and sent to conference, but whereas that bill provides for maximum pensions of $85 a month and equal contributions by employees and employers of 3 per cent of the compensation up to $3,000 a year, the railroad bills provide for a maximum of $120 a month and payments of 4 per cent by the employers and only 2 per cent by the employees on compensation up to $300 a month, or $3,600 a year.

Midwest Shippers Board

The thirty-sixth regular meeting of the Mid-West Shippers Advisory Board will be held in Chicago on July 11.

New I. C. Express Service for Fruits and Vegetables

The Illinois Central is now providing overnight express service on fruits and vegetables moving from Southern Illinois to Chicago at rates only slightly higher than those for freight.

Soil Improvement Car to Be Operated in Tennessee

The Nashville, Chattanooga & St. Louis and the Agricultural Extension Service of the University of Tennessee will operate a soil-improvement car to all counties of Tennessee from July 1 to July 17, for the purpose of aiding farmers in improving the fertility of their soil. The car is equipped to test thousands of samples of soil for acidity each day, and farmers will be advised without charge as to the requirements of their soil.

N. Y. C. Family Tickets Lower

The New York Central, beginning July 8, will sell in the New York suburban zone family tickets for 26 trips, in place of the 50-ride and 25-ride tickets heretofore in use, and at a small decrease in price. For example, between Grand Central Terminal and Woodlawn, 12 miles, the 26-trip tickets will cost $5.65; the former 25-trip tickets, $6.10. The new tickets are usable within one year. New 12-ride tickets, good for bearer and usable within six months, are also to be put on sale.

Coach Seats Now Reserved on the "City of Portland"

Coach passengers on the streamliner "City of Portland" of the Union Pacific-North Western are being assigned reserved seats at the time of purchasing tickets. This new arrangement, in force both eastbound and westbound and for which there is no extra charge, assures coach passengers of seats and has been adopted to avoid last-minute confusion and to make coach travel on the train more inviting. Arrangements have been made so that ticket agents in any part of the country can sell coach tickets to a passenger with a reserve seat assignment to the passenger at the time of purchase.

New York Central Lines Becomes New York Central System

The group of railroads heretofore known as the New York Central Lines will henceforth be called the New York Central System, according to an announcement made by President F. E. Williamson on July 1. The new name replaces one which has been in use since 1914, when the New York Central & Hudson River, with several other lines, was consolidated into the New York Central Railroad Company. The change of name on locomotives, cars and other equipment will be made over a period of time as the equipment is repainted, repaired or replaced.

North Western Places "Flambeau" in Service to North Woods

Fast daylight service to the fishing and resort regions of the North Woods of Wisconsin was started by the Chicago & North Western on June 21, when the "Flambeau," a new train, was put on to run into the eastern Wisconsin section on Fridays and providing connections to the western Wisconsin territory on Fridays, Saturdays and Sundays. The Flambeau will leave Chicago each Friday between June 21 and August 30 at 1 p.m. and arrive at Watersmeet at 9:35 p.m. and Mercer at 9:50 p.m. Southbound, the train will leave Watersmeet at 2:40 p.m. and Mercer at 2:30 p.m., and arrive in Chicago at 11:15 p.m. This train will also make an extra trip from Chicago on July 3.

Marshall Field & Co. Merchandise Express to Operate on B. & O.

The employment of railroad equipment as a means of conveying sales appeal direct to the buyer is being undertaken by Marshall Field & Co., Chicago, which is operating a special 10-car, air-conditioned train, designed especially for the display and sale of merchandise, over the Baltimore & Ohio-Alton to more than 20 cities in the Mississippi valley. This train, which will be in service from June 21 to July 26, consists of eight steel B. & O. coaches from which the seats have been removed and special display equipment for merchandise has been installed, a B. & O. dining car and a standard Pullman sleeping car for the accommodation of the 25 salespersons accompanying the train to show the merchandise to buyers and owners of stores in the towns visited. The

Display Fixtures Divide the Car Into Sections

Tables and Chairs Are Provided for the Convenience of Buyers

train was dedicated on June 22, when it was christened with a bottle of gulf water from New Orleans, La., the southernmost point of contact on the inaugural trip.

As shown in the accompanying illustrations, the fixtures divide the car into sections or departments. In some cars displays are on one side of the car, while in others they are located on both sides of the car.

Rivers and Harbors Bill Passed by Senate

The Senate on June 27 passed the rivers and harbors authorization bill, covering projects for the improvement and maintenance of rivers and harbor projects estimated to cost approximately $273,000,000, including, however, projects for which the Public Works Administration has allotted $105,000,000, many of which are underway. The list includes many expensive projects opposed by the railroads or as to which they asked that provision be made by the federal government for meeting the expense of bridge and other changes on railroad property. After a motion to reconsider the bill was again passed on July 2.

Freight Container Bureau Given Enlarged Authority

Methods of loading perishable fruits and vegetables for railroad shipment have been placed under full jurisdiction of the Freight Container Bureau of the Association of American Railroads, effective July 1, according to an announcement by John J. Pelley, president of the Association. It is expected that from this co-ordinated action of all railroads there will result greater uniformity, efficiency and economy in the shipment of perishable products, as well as an improvement in the type of containers used.

The Freight Container Bureau, under the direction of Edward Dahill, chief engineer, is to study containers for the transportation of perishables; to develop, in co-operation with shippers and container manufacturers, improvements of the present types where possible; and to prescribe, for all railroads, the character and type of containers for the shipment of each perishable commodity. The Bureau, created in 1921 as a research and recommending body, has played a considerable part in improved shipping methods which have resulted in a great decline in loss and damage of freight. It is expected, however, that with enlarged authority over the handling of fresh fruits and vegetables still greater progress will be made. The bureau headquarters will be in New York.

Before prescribing finally the use of any container or loading method, the bureau will hold public hearings of all interested parties, and will submit its proposals to an advisory committee of experienced freight handling officials. Its findings will be published in the usual tariff form, subject, of course, to the various state and national laws applying to the shipment of perishables and to the authority of the Interstate Commerce Commission.

New York Central Restores Pension Rule; 700 to Retire

The New York Central, as a result of the Supreme Court's decision declaring the Railroad Retirement Act unconstitutional, has restored its pension rule which requires the retirement of all employees reaching the age of 70. The rule was suspended on July 1, 1934, and its reinstatement became effective on July 1. Upon resumption of the rule more than 700 New York Central employees, being 70 years of age or over, will be retired by July 31. The New York Central's voluntary pension system has been in effect for the past 25 years and during 1934 a total of $3,651,600 was paid to 6,173 pensioners.

R. R. Credit Corporation Has Returned 33 Per Cent

The Railroad Credit Corporation has returned 33 per cent of the fund administered by it, according to a report filed with the Interstate Commerce Commission. Of the $24,284,209 total of liquidating distributions, $10,905,537 has been paid in cash and $13,378,672 credited on obligations due the corporation. E. G. Buckland, president of the corporation, said that cash receipts in June amounted to $439,893, of which $357,610 was in reduction of loans, $81,703 was interest and $580 was from miscellaneous sources. The eighteenth distribution to participating carriers was made as of June 30, returning $735,885, or the equivalent of 1 per cent of the net contributions, to the fund.

Fourth Section Relief Granted

Division 2 of the Interstate Commerce Commission has issued a report and order granting authority to the railroads, on conditions, to establish and maintain rates on export, import and domestic coastwise traffic to and from Galveston, Texas City, and Houston, Tex., on the one hand, and inland points in Texas and Louisiana on the other, without observing the long-and-short-haul provision of Section 4 of the interstate commerce act. Similar authority has also been granted on live stock, in carloads, between points in trunk-line territory, from points in southwestern Virginia, eastern Tennessee, and western North Carolina to destinations in trunk-line territory, and from points in trunk-line territory to destinations in central territory.

Increased Car Loadings Estimated

Freight car loadings in the third quarter of 1935 are expected to be about 2.9 per cent above actual loadings in the same quarter in 1934, according to estimates just compiled by the thirteen Shippers' Regional Advisory Boards. On the basis of these estimates, loadings of the 29 principal commodities will be 4,953,546 cars in the third quarter of 1935, compared with 4,812,279 actual loadings for the same commodities in the corresponding period last year. Nine of the 13 Shippers' Regional Advisory Boards estimate an increase in the loadings for the second quarter of 1935 compared with the same period in 1934, while four estimate a decrease.

Of the 29 commodities included in the estimate, increases are expected in 25, while decreases are expected in only 4, all of which are agricultural products. The commodities in which reductions under the same period last year are anticipated represent only 10.2 per cent of the total estimated loadings for the twenty-nine commodities. They are: flour, meal and other mill products; hay, straw and alfalfa; cotton, and live stock.

New Equipment

Class I railroads in the first five months of 1935 installed 1,294 new freight cars, according to reports received by the Association of American Railroads. In the same period last year, 2,327 new freight cars were placed in service, and, in the same period two years ago, there were 1,249. Twenty new steam locomotives and 55 new electric locomotives were placed in service in the first five months of this year. The railroads in the first five months of 1934, installed one new steam locomotive and six new electric locomotives.

New freight cars on order on June 1 totaled 1,479 compared with 20,011 on the same day in 1934 and 1,205 on the same day in 1933. The railroads on June 1

had on order 10 new steam locomotives and 37 new electric locomotives. New steam locomotives on order on June 1, 1934, totaled 40, and on the same date in 1933, there was one. New electric locomotives on order on June 1, 1934, totaled 107. No reports are available as to the number on order on June 1, 1933. Freight cars and locomotives leased or otherwise acquired are not included in the above figures.

Canadian Roads in May

The Canadian National reported gross revenues of $14,047,172 for May, a decrease of $720,682 from May of last year. Expenses were higher by $442,034, leaving the month's net at $656,319, as compared with $1,819,036 a year ago. For the five months ended May 31 revenues amounted to $66,429,716, compared with $65,581,300 for the corresponding period of last year, an improvement of $848,416. Operating expenses were $63,756,319, an increase of $1,565,266 over 1934. Five-months net at $2,673,397 compares with $3,390,248 a year ago.

The Canadian Pacific's May net was $1,143,913, as compared with $1,801,927 for May of last year, a decrease of $658,014. Gross for May was $9,913,938, a decrease of $540,081 from last year, while operating expenses at $8,770,024 represented an increase of $117,932. For the five months ended with May 31, net amounted to $4,658,206, which compares with $6,298,832 for the corresponding five-month period of last year, a decrease of $1,640,626. Gross for the five-month period at $46,338,752 shows a decrease of $862,663, while operating expenses at $41,680,546 shows an increase of $777,963.

Port Bill Passed by Senate

The bill proposed by Co-ordinator Eastman and recommended by the Interstate Commerce Commission to amend Section 3 of the interstate commerce act to include "ports," "gateways," and "transit points" within the definition of communities that may complain to the commission against undue discriminations in rates, S. 1633, was brought up in the Senate on July 1 on motion of Senator Moore, of New Jersey, and the entire afternoon was devoted to a speech in opposition to the bill by Senator Huey Long, of Louisiana. On the following day the motion was adopted in spite of Long's objections, and the bill was passed. The bill was introduced after the Supreme Court of the United States had held, in reviewing a decision of the Interstate Commerce Commission involving the relationships of rates via Texas ports and New Orleans, that a port was not a "community" in the sense contemplated by the anti-discrimination section of the law. Senator Long characterized it as an effort to annul two decisions of the court by an appeal to Congress and bitterly criticized the work of the Interstate Commerce Commission, which he said had "destroyed the finest network of transportation ever known to the world." "They have had absolutely unlimited control over the railroads," he said, "and they have left them there with rust and wreckage and ruin as a relic of what the Interstate Commerce Commission have done. Do you want to save the railroads of the United States today? The first thing you do, your turn them loose from the Interstate Commerce Commission; and they will come nearer coming out than in any other way you ever thought of."

N. & W. Executive Cites Dangers of Government Ownership

Declaring that federal ownership of the railroads would add 26 billion dollars "to the already gigantic public debt," Sydney F. Small, vice-president of the Norfolk & Western, in an address at Portsmouth, Ohio, on June 18, said that government operation of the carriers would result in inefficient service, the destruction of private initiative, and the "creation of the greatest political machine in the history of the nation."

Speaking at a Better Service Club meeting of the railroad's employees and an exhibit of new N. & W. air-conditioned passenger equipment, Mr. Small voiced an appeal for public support of the carriers, which he said have expended approximately seven billion dollars for modernization since 1923. Outlining improvements made by the Norfolk & Western, he revealed the railroad has spent $59,000,000 for modernization of facilities during the past four years.

The speaker, asserting that there "is only one way to solve the railroads' problems—a reawakening of our citizenry to the necessity for exercising the right of franchise," urged his hearers to demand that their representatives in Congress vote against any plan of government ownership and vote for legislation "that will provide equality of competition between the railroads and other forms of transportation. If you don't get the co-operation you ask, then vote for and put into office those who will give you that co-operation."

Net Deficit For Four Months $51,823,410

Class I railroads for the first four months of 1935 had a net deficit of $51,823,410 after depreciation and retirements, as compared with a deficit of $26,002,233 in the corresponding period of last year, according to the Interstate Commerce

SELECTED INCOME AND BALANCE-SHEET ITEMS OF CLASS I STEAM RAILWAYS IN THE UNITED STATES

Compiled From 143 Reports (Form IBS) Representing 149 Steam Railways
TOTALS FOR THE UNITED STATES (ALL REGIONS)

For the month of April 1935	For the month of April 1934	*Income Items*	For the four months of 1935	For the four months of 1934
$34,625,792	$32,433,938	1. Net railway operating income‡	$121,282,916	$145,130,075
13,349,114	13,237,600	2. Other income	51,415,869	53,775,267
47,974,906	45,671,538	3. Total income	172,698,785	198,905,342
11,090,412	11,091,952	4. Rent for leased roads	43,862,257	44,098,125
43,525,833	43,246,540	5. Interest deductions	174,055,005	173,401,790
1,615,600	2,061,358	6. Other deductions	6,604,933	7,407,660
56,231,845	56,399,850	7. Total deductions	224,522,195	224,907,575
		8. Net income:‡		
d 8,256,939	*d* 10,728,312	8–01. After depreciation and retirements	*d* 51,823,410	*d* 26,002,233
7,599,133	5,214,721	8–02. Before depreciation and retirements	12,320,506	37,562,859
		9. Dividend declarations (from income and surplus):		
2,124,729	1,226,052	9–01. On common stock	19,396,219	24,022,153
990,021	570,735	9–02. On preferred stock	4,285,871	3,866,835

Selected Asset Items	Balance at end of April 1935	Balance at end of April 1934
10. Investments in stocks, bonds, etc., other than those of affiliated companies (Total, Account 707)	$766,935,150	$752,035,674
11. Cash	$331,239,894	$304,477,008
12. Demand loans and deposits	10,579,267	32,818,776
13. Time drafts and deposits	39,354,639	44,413,830
14. Special deposits	84,711,609	86,888,862
15. Loans and bills receivable	4,243,574	6,572,474
16. Traffic and car-service balances receivable	53,892,345	52,604,322
17. Net balance receivable from agents and conductors	43,998,560	41,958,832
18. Miscellaneous accounts receivable	144,153,995	149,296,703
19. Materials and supplies	305,802,927	304,907,832
20. Interest and dividends receivable	39,847,606	38,466,715
21. Rents receivable	3,156,818	2,558,980
22. Other current assets	10,872,947	4,218,918
23. Total current assets (items 11 to 22)	$1,071,854,181	$1,069,183,252
Selected Liability Items		
24. Funded debt maturing within 6 months*	$187,212,741	$136,972,188
25. Loans and bills payable†	$326,419,508	$391,825,360
26. Traffic and car-service balances payable	68,320,654	67,532,520
27. Audited accounts and wages payable	217,496,400	220,473,587
28. Miscellaneous accounts payable	77,212,614	45,472,469
29. Interest matured unpaid	344,865,986	262,400,597
30. Dividends matured unpaid	4,721,019	4,717,647
31. Funded debt matured unpaid	292,022,196	229,181,999
32. Unmatured dividends declared	1,819,946	1,050,965
33. Unmatured interest accrued	111,184,088	107,724,714
34. Unmatured rents accrued	36,704,078	35,729,748
35. Other current liabilities	24,444,587	18,275,868
36. Total current liabilities (items 25 to 35)	$1,505,211,076	$1,384,385,474
37. Tax liability (Account 771):		
37–01. U. S. Government taxes	$35,627,138	$34,854,881
37–02. Other than U. S. Government taxes	132,782,680	138,310,631

* Includes payments which will become due on account of principal of long-term debt (other than that in Account 764, Funded debt matured unpaid) within 6 months after close of month of report.
† Includes obligations which mature less than 2 years after date of issue.
d Deficit.
‡ April, 1935, income as reported was increased by credits to operating expenses on account of reversal of charges previously made for liability under Railroad Retirement Act to the extent of approximately $3,730,451.

NET INCOME OF LARGE STEAM RAILWAYS WITH ANNUAL OPERATING REVENUES ABOVE $25,000,000

Name of railway	Net income after depreciation and retirements, For the four months of 1935	Net income after depreciation and retirements, For the four months of 1934	Net income before depreciation and retirements, For the four months of 1935	Net income before depreciation and retirements, For the four months of 1934
Alton R. R.	*d* 613,872	*d* 669,026	*d* 506,498	*d* 613,002
Atchison, Topeka & Santa Fe Ry. System*	*d* 2,405,412	*d* 1,086,948	1,417,049	2,735,325
Atlantic Coast Line R. R.	804,796	2,122,792	1,574,524	2,827,383
Baltimore & Ohio R. R.	*d* 1,994,747	*d* 3,126,100	308,557	*d* 557,660
Boston & Maine R. R.	*d* 456,120	*d* 579,911	89,063	*d* 43,434
Central of Georgia Ry.	*d* 952,601	*d* 795,846	*d* 686,526	*d* 531,403
Central R. R. of New Jersey	*d* 590,999	326,197	*d* 35,245	1,034,833
Chesapeake & Ohio Ry.	8,280,240	9,142,604	11,044,674	11,482,941
Chicago & Eastern Illinois Ry.	*d* 454,787	*d* 681,712	*d* 249,826	*d* 527,198
Chicago & North Western Ry.	*d* 4,331,102	*d* 3,426,447	*d* 2,619,867	*d* 1,922,887
Chicago, Burlington & Quincy R. R.	*d* 1,623,064	678,139	78,720	1,745,190
Chicago Great Western R. R.	*d* 786,890	*d* 483,432	*d* 611,575	*d* 309,413
Chicago, Milw., St. Paul & Pacific R. R.	*d* 7,037,668	*d* 5,787,595	*d* 5,151,562	*d* 3,487,727
Chicago, Rock Island & Pacific Ry.	*d* 5,409,846	*d* 4,288,340	*d* 3,911,695	*d* 2,641,276
Chicago, St. Paul, Minneap. & Omaha Ry.	*d* 1,009,400	*d* 599,645	*d* 797,955	*d* 415,839
Delaware & Hudson R. R.	*d* 1,177,916	*d* 532,044	*d* 841,414	*d* 165,698
Delaware, Lackawanna & Western R. R.	*d* 651,022	*d* 293,837	254,179	550,876
Denver & Rio Grande Western R. R.	*d* 1,453,840	*d* 1,066,757	*d* 1,056,717	*d* 712,678
Elgin, Joliet & Eastern Ry.	612,727	*d* 196,465	911,815	107,866
Erie R. R. (including Chicago & Erie R. R.)	*d* 630,977	455,679	777,790	1,995,235
Grand Trunk Western R. R.	*d* 179,343	*d* 163,520	178,183	146,170
Great Northern Ry.	*d* 4,252,428	*d* 5,243,715	*d* 3,128,279	*d* 4,031,179
Illinois Central R. R.	*d* 651,329	*d* 45,358	1,641,556	2,199,708
Lehigh Valley R. R.	*d* 540,223	142,814	256,706	788,770
Long Island R. R.	*d* 811,922	*d* 274,742	*d* 465,566	47,730
Los Angeles & Salt Lake R. R.	*d* 184,325	*d* 105,577	73,421	109,296
Louisville & Nashville R. R.	836,039	2,003,805	2,258,244	3,402,452
Minneapolis, St. Paul & Slt. Ste. Marie Ry.	*d* 2,610,506	*d* 2,158,873	*d* 2,245,714	*d* 1,675,145
Missouri-Kansas-Texas Lines	*d* 1,845,910	*d* 1,261,402	*d* 1,407,693	*d* 938,483
Missouri Pacific R. R.	*d* 6,263,326	*d* 4,317,486	*d* 4,800,415	*d* 2,720,815
New York Central R. R†	*d* 2,578,831	*d* 1,712,165	2,965,145	3,379,818
New York, Chicago & St. Louis R. R.	102,115	397,457	650,445	849,440
New York, New Haven & Hartford R. R.	*d* 1,449,682	*d* 1,185,471	*d* 294,510	162,595
Norfolk & Western Ry.	6,267,560	6,856,677	7,641,438	8,429,290
Northern Pacific Ry.	*d* 4,330,105	*d* 2,862,677	*d* 3,245,304	*d* 1,901,634
Oregon Short Line R. R.	132,745	31,851	481,733	358,561
Oregon-Washington R. R. & Navigation Co.	*d* 1,286,415	*d* 1,033,902	*d* 1,088,579	*d* 855,487
Pennsylvania R. R.	6,020,715	6,132,576	12,765,068	13,058,757
Pere Marquette Ry.	441,753	422,649	1,300,991	1,181,550
Pittsburgh & Lake Erie R. R.	811,841	801,487	1,382,034	1,582,788
Reading Co.	1,425,510	2,848,987	2,435,155	3,898,949
St. Louis-San Francisco Ry.	*d* 4,305,880	*d* 2,975,091	*d* 3,262,505	*d* 1,917,891
St. Louis Southwestern Lines	*d* 74,924	*d* 475,350	134,397	*d* 301,493
Seaboard Air Line Ry.	*d* 1,703,269	*d* 1,608,993	*d* 1,089,223	*d* 1,034,704
Southern Ry.	*d* 1,493,360	*d* 67,849	*d* 554,602	972,681
Southern Pacific Transportation System‡	*d* 3,575,170	*d* 4,826,354	*d* 1,082,720	*d* 2,221,026
Texas & Pacific Ry.	43,387	68,181	445,625	466,522
Union Pacific R. R.	3,603,371	4,940,368	4,923,471	6,386,380
Wabash Ry.	*d* 901,670	*d* 946,048	*d* 179,389	*d* 349,504
Yazoo & Mississippi Valley R. R.	*d* 1,035,127	*d* 867,709	*d* 862,142	*d* 679,114

* Includes Atchison, Topeka & Santa Fe Ry., Gulf, Colorado & Santa Fe Ry., and Panhandle & Santa Fe Ry.
† Includes Boston & Albany, Michigan Central, and Big Four Lines, lessors to New York Central R. R.
‡ Includes Southern Pacific Company and Texas & New Orleans R. R.
d Deficit.

Commission's monthly compilation of selected income and balance-sheet items. For April the net deficit was $8,256,939, as compared with $10,728,312 in April, 1934.

Annual P. & S. Contest Winners

The Purchases and Stores Division, A. A. R., has announced winners of the competition held during the year among employees of railway purchasing and stores departments for papers on supply work. Honors for the best papers went equally to Clifton E. Oeschger, chief clerk to division storekeeper, Chicago, Milwaukee, St. Paul & Pacific, Mason City, Iowa, for a paper entitled "Material Savings Versus Pay-Roll Savings," and to Henry R. Kelley, assistant chief clerk, stores department, Gulf, Colorado & Santa Fe, Cleburne, Texas, for a paper on "Surplus Material." Three papers were also awarded honorable mention, as follows: "Stock Control—Keeping the Balance Down and Minimizing Adjustments," by Paul W. Donnelly, price clerk, stores department, Southern Pacific, El Paso, Texas; "Decreased Detail Through Advance Analysis," by Wilbert J. Adams, requisition marker, purchasing agent's office, Pennsylvania, Philadelphia, Pa.; "Stock Control of Stationery," Edward L. Kappler, general foreman, stores department, Southern Pacific, San Leandro, Cal. As in past years, the authors of the two best papers will be invited to the annual meeting of the Purchases and Stores Division to be held in Chicago on July 23 and 24 in the Palmer House, where they will present their papers.

Reduced Coal Rate Found Unjustified

The Interstate Commerce Commission, Division 4, has issued a report finding not justified a tariff filed by the Pittsburgh & West Virginia, which had been suspended, proposing to reduce from 88 to 30 cents per ton its rate on bituminous coal from Smithfield, Ohio to the east end of its Ohio river bridge in West Virginia, to enable it to handle the output of a mine which had proposed to make an arrangement for the moving of its product by truck at a rate of 25 cents. The report said the record left no doubt that if the proposed rate were permitted to become effective like reductions would be precipitated in other rates which form parts of the highly-competitive and closely-woven coal rate adjustment in Ohio, Pennsylvania, and West Virginia which in large measure has been prescribed or approved by the commission.

Commissioner Mahaffie dissented, saying that while the 30-cent rate was lower than necessary to meet truck competition the coal would be subject to a similar charge for the water portion of the movement and that, since the total transportation cost to the shipper would be not less than 55 cents per ton, he was not convinced that such a rate would have the disastrous effect on the coal rate structure visualized by the majority. He said it seemed clear that the business would be profitable to the railroad.

Steam Railway Accident Statistics March, 1935

The Interstate Commerce Commission's completed statistics of steam railway accidents for the month of March, now in preparation for the printer, will show:

Item	Month of March 1935	Month of March 1934	3 months ended with March 1935	3 months ended with March 1934
Number of train accidents:				
Total	566	592	1,789	1,733
(At highway grade crossings, included in total)	10	12	46	42
Number of casualties in train, train-service and nontrain accidents:				
Tresspassers:				
Killed	204	179	496	449
Injured	229	199	603	526
Passengers on trains:				
Killed	1	1	5	9
Injured	156	93	618	404
Employees on duty:				
Killed	32	55	138	155
Injured	1,264	1,469	4,020	4,269
All other nontrespassers:*				
Killed	138	128	391	381
Injured	513	509	1,842	1,721
Total—All classes of persons:				
Killed	375	363	1,030	994
Injured	2,162	2,270	7,083	6,920

* Casualties to "Other nontrespassers" happen chiefly at highway grade crossings. Total highway grade-crossing casualties for all classes of *persons, including both trespassers and nontrespassers*, were as follows:

Killed	130	122	364	362
Injured	349	342	1,262	1,217

Bus-Truck Bill Before House Committee

Consideration of the bill for the regulation of bus and truck transportation, which has been passed by the Senate, was expected to be taken up by the House committee on interstate and foreign commerce this week when it meets to receive the report of the sub-committee, headed by Representative Huddleston, of Alabama, which held the hearings on the bill and has been handling the matter while the full committee has been engaged on the public utility holding company bill. The sub-committee has reported to the full committee, by a vote of three to two, an entirely new bill, which contains much less than the bill passed by the Senate and is satisfactory neither to the railroads, which have been urging regulation of their competitors, nor to the trucking interests that have been working for a plan of regulation to stabilize competitive conditions within the industry. It is based on Mr. Huddleston's idea that it is impracticable to regulate the rates of the truck operators, particularly those of the small truck owners

operating single trucks, and provides for rate regulation only for bus transportation. Passenger carriers would be required to file tariffs with the Interstate Commerce Commission and to observe them unless permitted by the commission to make changes on less than 30 days' notice. Provision is also made for the suspension of passenger rates and for the fixing of maximum and minimum rates by the commission. The proposed bill omits provisions relating to the issuance of certificates of public convenience and necessity, but provides for the issuance of permits to operators "fit, willing and able to perform the service, and to conform to the provisions of this part and the lawful requirements, rules and regulations of the commission thereunder." The bill proposes the creation of a division of highway transportation in the commission, to be composed of three members. Exemption from regulation is proposed for various special operations and motor vehicles carrying livestock or unprocessed agricultural products or those used exclusively in the distribution of newspapers and periodicals. The American Trucking Associations, Inc., went on record as opposed to the sub-committee bill at a meeting in Washington on Monday.

Present Acuteness of Railroad Problem Due to General Business Conditions

The present acuteness of the railroad problem is due to conditions in general business, and would be quickly relieved by a substantial improvement in general business resulting in a corresponding increase in the production and distribution of commodities, according to Samuel O. Dunn, chairman of the Simmons-Boardman Publishing Company and editor of the *Railway Age*, in an address on June 27 before the Chicago Federated Advertising Club.

"The main thing the matter with the railroads," he said, is that during the first half of 1935 freight car loadings have been slightly smaller than in the first half of 1934 and 40 per cent smaller than in the first half of 1929. The railways have their special problems, some of which demand special action by government, because of unfair government discrimination, as regards subsidies and regulation, against them and in favor of competing carriers. But their immediate problem, and the principal cause of their present financial condition, is the same as that of most industries—lack of business. We cannot change that condition by financial reorganizations, or by consolidations, or by government ownership, or by any of the other radical means favored by those who apparently wish to evade the real issue. We can remedy it only by removing the causes of continuance of the depression.

"What is the principal condition in general business which is responsible for freight business still being 40 per cent less than in 1929? Unquestionably, it is the continued stagnation, and lack of production and employment, in the durable goods industries. Normally the railways derive the bulk of their heavy tonnage traffic from the fuel and raw materials used, and the manufactured articles produced, by the durable goods industries. Therefore, revive these industries and you will greatly increase railway traffic. Excepting automobiles, five-sixths of all buying of durable goods is done by business itself, including the railroads, with profits, or capital raised by the sale of securities made possible by actual and prospective profits. It follows that the crucial problem presented to government and business leadership is that of increasing business profits and inspiring confidence in future profits.

"Ordinarily the railways are among the largest buyers of durable goods. Their purchases of them are now running at least $1,000,000,000 a year less than normal. Increased buying of durable goods by other industries would increase the traffic and earnings and, therefore, the buying power of the railways. Their buying power would be further increased by reductions of their operating expenses, and especially by rescinding the advance made within the last year in the wages paid by them, which are now on the same basis as the peak of prosperity."

Meetings & Conventions

The following list gives names of secretaries, date of next or regular meetings and places of meetings:

AIR BRAKE ASSOCIATION.—T. L. Burton, Room 3400 Empire State Bldg., New York, N. Y.

ALLIED RAILWAY SUPPLY ASSOCIATION.—F. W. Venton, Crane Company, 836 S. Michigan Ave., Chicago, Ill. To meet with Air Brake Association, Car Department Officers' Association, International Railroad Master Blacksmiths' Association, International Railway Fuel Association, International Railway General Foremen's Association, Master Boiler Makers' Association and the Traveling Engineers' Association.

AMERICAN ASSOCIATION OF FREIGHT TRAFFIC OFFICERS.—W. R. Curtis, F. T. R., M. & O. R. R., Chicago, Ill.

AMERICAN ASSOCIATION OF GENERAL BAGGAGE AGENTS.—E. L. Duncan, 816 McCormick Bldg., Chicago, Ill. Annual meeting, September 17-19, 1935, Royal York Hotel, Toronto, Canada.

AMERICAN ASSOCIATION OF PASSENGER TRAFFIC OFFICERS.—W. C. Hope, C. R. R. of N. J., 143 Liberty St., New York, N. Y. Annual Meeting, October 8-9, 1935, Hotel Alms, Cincinnati, Ohio.

AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—F. O. Whiteman, Union Station, St. Louis, Mo.

AMERICAN ASSOCIATION OF RAILWAY ADVERTISING AGENTS.—E. A. Abbott, Poole Bros., Inc., 85 W. Harrison St., Chicago, Ill. Annual meeting, January 17-18, 1936.

AMERICAN ASSOCIATION OF SUPERINTENDENTS OF DINING CARS.—F. R. Borger, C. I. & L. Ry., 836 S. Federal St., Chicago, Ill. Annual meeting, October 15-17, 1935, Clift Hotel, San Francisco, Cal.

AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichty, C. & N. W. Ry., 319 N. Waller Ave., Chicago, Ill. Annual meeting, October 15-17, 1935, Hotel Stevens, Chicago, Ill. Exhibit by Bridge and Building Supply Men's Association.

AMERICAN RAILWAY CAR INSTITUTE.—W. C. Tabbert, 19 Rector St., New York, N. Y.

AMERICAN RAILWAY DEVELOPMENT ASSOCIATION.—E. H. Gurton, Mgr., Land Settlement and Development, C. N. R., St. Paul, Minn. Next meeting, December 5-6, 1935, Chicago, Ill.

AMERICAN RAILWAY ENGINEERING ASSOCIATION.—Works in co-operation with the Association of American Railroads, Division IV.—E. H. Fritch, 59 E. Van Buren St., Chicago, Ill. Annual meeting, March 10-12, 1936, Palmer House, Chicago, Ill.

AMERICAN RAILWAY MAGAZINE EDITORS' ASSOCIATION.—M. Fenaja, Missouri Pacific Lines Magazine, Missouri Pacific Lines Bldg., St. Louis, Mo.

AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—G. G. Macina, C. M. St. P. & P. R. R., 11402 Calumet Ave., Chicago, Ill.

AMERICAN SHORT LINE RAILROAD ASSOCIATION.—R. E. Schindler, Union Trust Bldg., Washington, D. C. Annual meeting, October, 1935, New Orleans, La.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—C. E. Davies, 29 W. 39th St., New York, N. Y.

Railroad Division.—Marion B. Richardson, 192 E. Cedar St., Livingston, N. J.

AMERICAN TRANSIT ASSOCIATION.—Guy C. Hecker, 292 Madison Ave., New York, N. Y. Annual meeting, September 23-25, 1935, Ambassador Hotel, Atlantic City, N. J.

AMERICAN WOOD PRESERVERS' ASSOCIATION.—H. L. Dawson, 1427 Eye St., N. W., Washington, D. C. Annual meeting, January 28-30, 1936, Memphis, Tenn.

ASSOCIATION OF AMERICAN RAILROADS.—H. J. Forster, Transportation Bldg., Washington, D. C.

Operations and Maintenance Department.—J. R. Downes, Vice-President, Transportation Bldg., Washington, D. C.

Division I.—Operating.—J. C. Caviston, 30 Vesey St., New York, N. Y.

Freight Station Section.—R. O. Wells, Freight Agent, Illinois Central Railroad, Chicago, Ill.

Medical and Surgical Section.—J. C. Caviston, 30 Vesey St., New York, N. Y.

Protective Section.—J. C. Caviston, 30 Vesey St., New York, N. Y.

Safety Section.—J. C. Caviston, 30 Vesey St., New York, N. Y. Annual meeting, October 15-16, 1935, Louisville, Ky.

Telegraph and Telephone Section.—W. A. Fairbanks, 30 Vesey St., New York, N. Y.

Division II. — Transportation. — G. W. Covert, 59 E. Van Buren St., Chicago, Ill.

Division IV. — Engineering. — E. H. Fritch, 59 E. Van Buren St., Chicago, Ill. Annual meeting, March 10-12, 1936, Palmer House, Chicago, Ill.

Construction and Maintenance Section.—E. H. Fritch, 59 E. Van Buren St., Chicago, Ill. Annual meeting, March 10-12, 1936, Palmer House, Chicago, Ill.

Electrical Section.—E. H. Fritch, 59 E. Van Buren St., Chicago, Ill.

Signal Section.—R. H. C. Balliet, 30 Vesey St., New York, N. Y.

Division V.—Mechanical.—V. R. Hawthorne, 59 E. Van Buren St., Chicago, Ill.

Division VI.—Purchases and Stores.—W. J. Farrell, 30 Vesey St., New York, N. Y. Annual meeting, July 23-24, 1935, Palmer House, Chicago, Ill.

Division VII.—Freight Claims. — Lewis Pilcher, 59 E. Van Buren St., Chicago, Ill.

Division VIII. — Motor Transport. — George M. Campbell, Transportation Bldg., Washington, D. C.

Car-Service Division.—C. A. Buch, Transportation Bldg., Washington, D. C.

Traffic Department.—A. F. Cleveland, Vice-President, Transportation Bldg., Washington, D. C.

Finance, Accounting, Taxation and Valuation Department.—E. H. Burnell, Vice-President, Transportation Bldg., Washington, D. C.

ASSOCIATION OF RAILWAY CLAIM AGENTS.—F. L. Johnson, Chief Clerk and Claim Agent, General Claims Dept., Alton R. R., 340 W. Harrison St., Chicago, Ill. Annual meeting, 1936, St. Paul, Minn.

ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.—Jos. A. Andreucetti, C. & N. W., 1519 Daily News Bldg., 400 W. Madison St., Chicago, Ill.

BRIDGE AND BUILDING SUPPLY MEN'S ASSOCIATION.—L. F. Flanagan, Detroit Graphite Company, Room 1158, 20 N. Wacker Drive, Chicago, Ill. Meets with American Railway Bridge and Building Association.

CANADIAN RAILWAY CLUB.—C. R. Crook, 2276 Wilson Ave., N. D. G., Montreal, Que. Regular meetings, second Monday of each month, except June, July and August, Windsor Hotel, Montreal, Que.

CAR DEPARTMENT OFFICERS' ASSOCIATION.—A. S. Sternberg, M. C. B. Belt Ry. of Chicago, 7926 S. Morgan St., Chicago, Ill.

CAR FOREMEN'S ASSOCIATION OF CHICAGO.—G. K. Oliver, 2514 W. 55th St., Chicago, Ill. Regular meetings, second Monday of each month, except June, July and August, La Salle Hotel, Chicago, Ill.

CAR FOREMEN'S ASSOCIATION OF LOS ANGELES.—J. W. Krause, Room 299, 610 S. Main St., Los Angeles, Cal. Club not active at present.

CAR FOREMEN'S ASSOCIATION OF ST. LOUIS, MO.—E. G. Bishop, Illinois Central R. R., East St. Louis, Ill.

CENTRAL RAILWAY CLUB OF BUFFALO. — Mrs. M. D. Reed, 1817 Hotel Statler, McKinley Square, Buffalo, N. Y. Regular meetings, second Thursday of each month, except June, July and August, Hotel Statler, Buffalo, N. Y.

CINCINNATI RAILWAY CLUB.—D. R. Boyd, 2920 Utopia Place, Hyde Park, Cincinnati, Ohio. Operation suspended indefinitely.

CLEVELAND RAILWAY CLUB.—F. L. Frericks, 14416 Alder Ave., Cleveland, Ohio. Meetings temporarily suspended.

INTERNATIONAL RAILROAD MASTER BLACKSMITHS'

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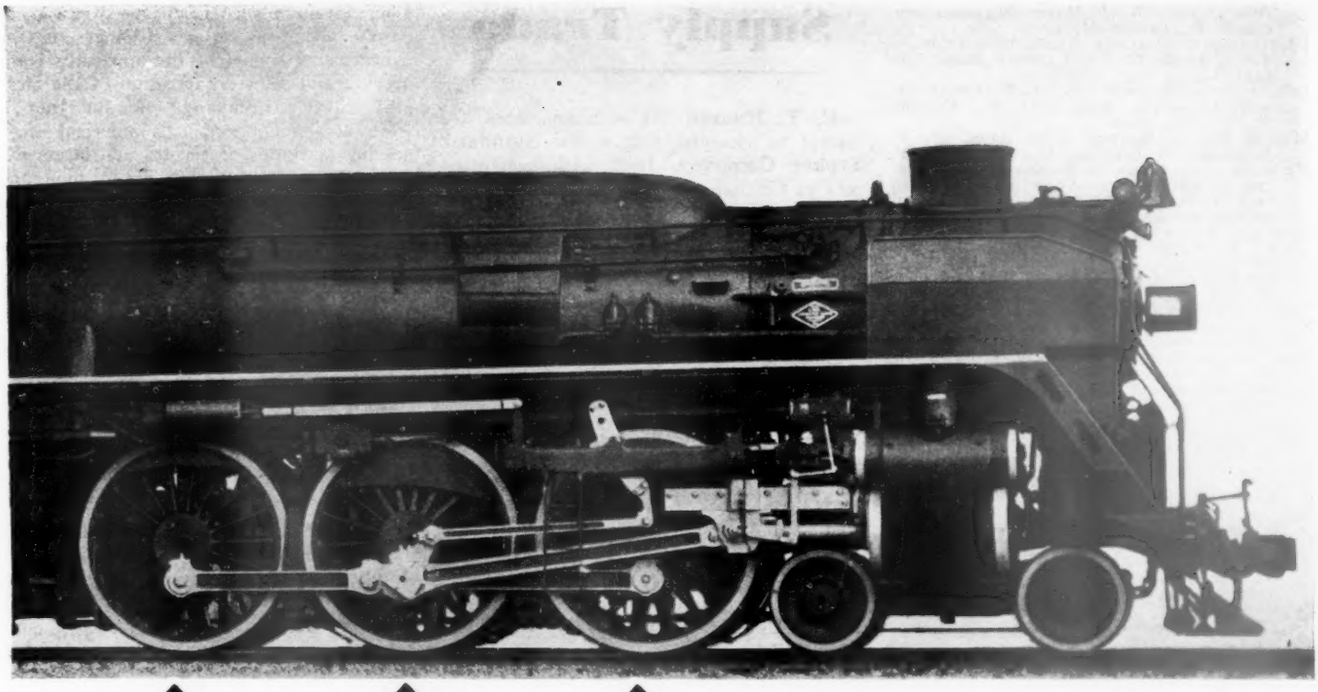

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ASSOCIATION.—W. J. Mayer, Michigan Central R. R., Detroit, Mich.

INTERNATIONAL RAILWAY FUEL ASSOCIATION.—T. D. Smith, 1660 Old Colony Bldg., Chicago, Ill.

INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—Wm. Hall, 1061 W. Wabasha St., Winona, Minn.

MASTER BOILER MAKERS' ASSOCIATION.—A. F. Stiglmeier, 29 Parkwood St., Albany, N. Y.

NATIONAL ASSOCIATION OF RAILROAD AND UTILITIES COMMISSIONERS.—Clyde S. Bailey, 810 18th St., N. W., Washington, D. C. Annual meeting, October 15-18, 1935, Nashville, Tenn.

NATIONAL RAILWAY APPLIANCES ASSOCIATION.—C. W. Kelly, Suite 322, 910 S. Michigan Ave., Chicago, Ill. Exhibit at A. R. E. A. Convention, March 9-12, 1936, The Coliseum, Chicago, Ill.

NATIONAL SAFETY COUNCIL.—Steam Railroad Section (see Safety Section, Association of American Railroads).

NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meetings, second Tuesday of each month, except June, July, August and September, Copley-Plaza Hotel, Boston, Mass.

NEW YORK RAILROAD CLUB.—D. W. Pye, 30 Church St., New York, N. Y. Regular meetings, third Friday of each month, except June, July and August, 29 W. 39th St., New York, N. Y.

PACIFIC RAILWAY CLUB.—William S. Wollner, P. O. Box 3275, San Francisco, Cal. Regular meetings, second Thursday of each month, alternately at San Francisco and Oakland, excepting July at Los Angeles and October at Sacramento.

RAILWAY ACCOUNTING OFFICERS' ASSOCIATION.—(Merged with Association of American Railroads.)

RAILWAY BUSINESS ASSOCIATION.—P. H. Middleton (Treas. and Asst. Sec.), First National Bank Bldg., Chicago, Ill. Annual meeting, November, 1935, Hotel Stevens, Chicago, Ill.

RAILWAY CLUB OF PITTSBURGH.—J. D. Conway, 1941 Oliver Bldg., Pittsburgh, Pa. Regular meetings, fourth Thursday of each month, except June, July and August, Fort Pitt Hotel, Pittsburgh, Pa.

RAILWAY ELECTRICAL SUPPLY MANUFACTURERS' ASSOCIATION.—Edward Wray, 9 S. Clinton St., Chicago, Ill. Meets with Association of Railway Electrical Engineers.

RAILWAY FIRE PROTECTION ASSOCIATION.—R. R. Hackett, Baltimore & Ohio R. R., Baltimore, Md. Annual meeting, October 15-16, 1935, Baltimore, Md.

RAILWAY SUPPLY MANUFACTURERS' ASSOCIATION.—J. D. Conway, 1941 Oliver Bldg., Pittsburgh, Pa. Meets with Mechanical Division, Purchases and Stores Division, and Motor Transport Division, Association of American Railroads.

RAILWAY TELEGRAPH AND TELEPHONE APPLIANCE ASSOCIATION.—G. A. Nelson, Waterbury Battery Company, 30 Church St., New York, N. Y. Meets with Telegraph and Telephone Section of A. A. R., Division I.

RAILWAY TIE ASSOCIATION.—I. C. Rowe, 2091 Railway Exchange Bldg., St. Louis, Mo.

RAILWAY TREASURY OFFICERS' ASSOCIATION.—L. W. Cox, 1428 Broad Street Station Bldg., Philadelphia, Pa. Annual meeting, September 20-21, 1935, Netherland-Plaza Hotel, Cincinnati, Ohio.

ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—T. F. Donahoe, Gen. Supvr. Road, Baltimore & Ohio, Pittsburgh, Pa. Annual meeting, September 17-19, 1935, Hotel Stevens, Chicago, Ill.

SIGNAL APPLIANCE ASSOCIATION.—G. A. Nelson, Waterbury Battery Company, 30 Church St., New York, N. Y. Meets with A. A. R., Signal Section.

SOCIETY OF OFFICERS, UNITED ASSOCIATIONS OF RAILROAD VETERANS.—M. W. Jones, Baltimore & Ohio, Mt. Royal Station, Baltimore, Md. Annual meeting, October 5-6, 1935, Cincinnati, Ohio.

SOUTHERN AND SOUTHWESTERN RAILWAY CLUB.—A. T. Miller, 4 Hunter St., S. E., Atlanta, Ga. Regular meetings, third Thursday in January, March, May, July, September and November. Ansley Hotel, Atlanta, Ga.

SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—R. G. Parks, A. B. & C. R. R., Atlanta, Ga.

TOOL FOREMEN SUPPLIERS' ASSOCIATION.—E. E. Caswell, Union Twist Drill Co., 11 S. Clinton St., Chicago, Ill. Meets with American Railway Tool Foremen's Association.

TORONTO RAILWAY CLUB.—R. H. Burgess, P. O. Box 8, Terminal "A," Toronto, Ont. Regular meetings, first Friday of each month, except July, August and September, Royal York Hotel, Toronto, Ont.

TRACK SUPPLY ASSOCIATION.—D. J. Higgins, Gardner-Denver Company, 332 S. Michigan Ave., Chicago, Ill. Meets with Roadmasters' and Maintenance of Way Association.

TRAVELING ENGINEERS' ASSOCIATION.—W. O. Thompson, 1177 E. 98th St., Cleveland, Ohio.

WESTERN RAILWAY CLUB.—C. L. Emerson, C. M. St. P. & P., Chicago, Ill. Regular meetings, third Monday of each month, except June, July, August and September, Hotel Sherman, Chicago, Ill.

Supply Trade

C. T. Hansen has been appointed assistant to vice-president of the **Standard Stoker Company, Inc.,** with headquarters at Chicago.

Albert Reichmann, assistant chief engineer of the **American Bridge Company** with headquarters at Chicago has been elected vice-president with the same headquarters.

The Constant Hopkins Company, Chicago, has been organized with **Constant C. Hopkins** sole owner, to succeed the **Hopkins-Benedict Company,** recently dissolved.

Midgley & Borrowdale, 8 South Michigan avenue, Chicago, have been appointed general sales representatives for the bus and railroad fields of **The Shelton Looms,** operated by **Sidney Blumenthal & Company, Inc.,** 1 Park avenue, New York.

A. B. Nilsen, Grand Central Terminal, New York, has been appointed sales representative of the **George O. Jenkins Company,** Bridgewater, Mass., covering New England, New York and Northern Atlantic states, and **W. W. Fetner,** Railway Exchange building, St. Louis, Mo., will cover the St. Louis territory.

W. S. Long, manager of mechanical sales of **United States Rubber Products, Inc.,** with headquarters at Seattle, Wash., has been transferred to Los Angeles, Cal., and has been succeeded by **C. W. Gilmer,** sales representative at San Francisco, Cal. This company has moved its New Orleans, La., branch from 202 Fulton street to 440 Canal street.

John G. Barry, senior vice-president of the **General Electric Company,** Schenectady, N. Y., retired on July 1 after more than 45 years of service, and his election to an honorary vice-presidency was announced by President Gerard Swope. Mr. Barry will maintain an office in Schenectady and will be available for consultation. Mr. Barry, as active head of the apparatus sales organization, has for many years formulated and executed the company's policy and sales program in the apparatus field. He went directly from school into technical training as an apprentice and test man with the old Thomson-Houston Company. He was formally employed for the first time in 1890, however, and soon became a member of the railway department, going to New York and then Schenectady, in 1894, when the home offices of the newly-formed General Electric Company were established there; within three years he had been made assistant manager of the department—then one of the two main divisions of the company. Ten years later, in 1907, he was appointed manager, and in 1917 the duties of general sales manager for the company were added to those specifically in the transportation field. Mr. Barry was made a vice-president in 1922, and with J. R. Lovejoy was placed in charge of the company's apparatus sales. Changes in the executive personnel of the apparatus engineering and sales organization of the General Electric Company, effective July 1, were also announced. Commercial engineering activities of the transportation department and general office commercial transportation activities will be supervised by vice-president **H. L. Andrews,** who will become a member of the apparatus sales committee. Industrial commercial engineering will hereafter be under the direction of **W. W. Miller,** manager of the industrial department, and central station commercial engineering under the direction of **M. O. Troy,** manager of the central station department of the company. Vice-president **E. W. Allen** will be a member of the apparatus sales committee, and will have supervision of the contract service department and in addition will assist the district offices in all phases of their work. Vice-president **E. O. Shreve** will continue as executive representative of the company in the National Electrical Manufacturers Association, and is appointed chairman of the apparatus sales committee, which will direct the general commercial policies of the apparatus departments of the company.

American Car & Foundry Co.

The American Car & Foundry Company for the fiscal year ended April 30, 1935, reported a consolidated net loss after all charges of $1,968,514, as compared with a 1933-34 net loss of $3,306,832. Of last year's net loss approximately $1,600,000 is accounted for by the depreciation deduction.

The company's financial condition remains exceptionally strong and liquid—its balance sheet as of April 30 shows that, with neither funded debt nor bank loans, it had current assets in excess of $18,000,000, as against current liabilities of less than $900,000. Cash alone among the current assets amounted to $5,473,060.

In commenting on the business of the period under review, President Charles J. Hardy points out that the year's opening was "marked by a resumption of railroad buying of new equipment in considerable volume," but that, "unfortunately, the expectation, then reasonably held, that such buying would continue throughout the year was not realized." Referring to the discontinuance of N. R. A. codes as a result of the recent Supreme Court decision, Mr. Hardy finds that, although, "undoubtedly, more of good than of harm resulted from the operation of that Act," it nevertheless "failed to better to any great extent the condition of the so-called 'heavy industries.'"

Continuing, Mr. Hardy said:

> One of the major problems, that of unemployment resulting from and a concomitant of the great depression, is still with us—and there could be no more certain way of ameliorating that condition than by a revival of a real and lasting activity in these "heavy industries." Such a revival in our line of industry would give employment not only to the thousands engaged directly in it, but to the hundreds of thousands engaged in the various and varied industries contributory to it. This, however, presents the problem of the railroads themselves—a problem apparently no nearer solution than it was a year ago. The hesitancy of the roads to purchase new equipment is due to many causes—too many and too complex to admit of discussion here. That many, practically all, of the roads are sadly in

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When

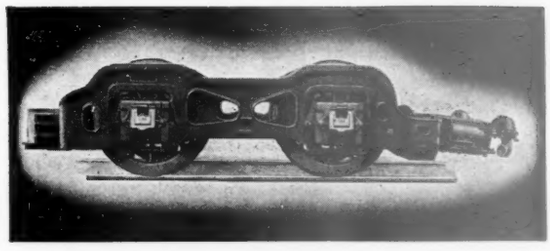
AIR-CONDITIONED PASSENGERS GROW "HOT UNDER THE COLLAR"

Cool, comfortable trains go a long way toward increasing passenger travel.

But the comfort of air-conditioned coaches won't prevent passengers from getting "hot" if they are subjected to jerky starting and late arrival.

The increased investment and power demand for air-conditioning needs the Booster to protect the new standard of operation by providing extra power for smooth starts, quick acceleration, and on grades.

Booster locomotives safeguard against delays. They capitalize the value of every effort made to increase passenger travel—and hold it.



Booster Repair Parts made by the jigs and fixtures that produced the original are your best guarantee of satisfactory performance.

FRANKLIN RAILWAY SUPPLY COMPANY, INC.

NEW YORK CHICAGO MONTREAL

need of new equipment, both motive power and rolling stock, is beyond doubt, and a return of freight movement to the normal would at once make apparent the inadequacy of the facilities for its handling—this aside from the lack of economy attendant upon railroad operation with equipment of the type and capacity of much of that now extant.

In a recent review, by a competent authority, of the condition of forty-five of the leading roads of the country, it was shown that 22.1 per cent of all the cars owned by the roads under review (amounting in the aggregate to more than two million) were more than twenty-five years old, 42.9 per cent were more than twenty years old, and 60.7 per cent were more than fifteen years old. In the case of one of the roads listed (and this a road of great importance), of the cars owned by it more than 74 per cent were of an age in excess of twenty-five years.

The conclusion naturally to be drawn from this study is that but a very small proportion of all the cars of the country are "modern" in the sense of being factors of value in railroad operation from the viewpoint of efficiency and economy —and, as an inevitable corollary, that there cannot be much longer deferred the replenishment and rejuvenation of rolling-stock if the roads are to continue to discharge their function as carriers of the country's traffic.

OBITUARY

George W. Denyven, who was associated for many years with a number of companies handling iron and steel products, formerly with his headquarters at Boston, Mass., and since January, 1929, with the San Francisco branch office of A. M. Castle & Co., Chicago, died on June 19 at San Francisco, Cal. Mr. Denyven took an active part in the affairs of the Transportation Club, the Pacific Railway Club and in the activities of the June conventions at Atlantic City, N. J.

Equipment and Supplies

IRON AND STEEL

THE UNITED STATES ENGINEERS OFFICE, Portland, Ore., has ordered 750 tons of 90-lb. rail and 78 tons of angle bars from the Columbia Steel Company and 225 tons of bolts, spikes and tie plates from the Colorado Fuel & Iron Company. The material will be used on the Bonneville Dam project.

STATEN ISLAND RAPID TRANSIT RAILWAY COMPANY, subsidiary of Baltimore & Ohio.—An order for 850 tons of reinforcing steel has been given to Joseph T. Ryerson & Son, Inc., and a contract for 930 tons has been given to the Truscon Steel Company by the P. T. Cox Construction Company, general contractors, for grade crossing elimination work on the Port Richmond-Tower Hill, Staten Island, project.

SIGNALING

Union Signals for Camden Bridge

The Delaware River Joint Commission (Pennsylvania and New Jersey) has contracted with the Union Switch & Signal Company for the installation of a complete system of automatic-block signals and interlocking, for the double-track railroad across the suspension bridge between Philadelphia, Pa., and Camden, N. J., and including two underground stations in Camden. The western terminus of this new line is also underground, joining the Philadelphia subway system at Market and Eighth streets; and the electro-pneumatic interlocking at this point is operated from the Fairmount avenue interlocking station, about 1½ miles distant. The interlockings and the automatic train stops of the new line will be electro-pneumatic.

MISCELLANEOUS

THE CHICAGO, BURLINGTON & QUINCY has placed an order with the Timken Roller Bearing Company, Canton, Ohio, for roller bearings, for all driving axles of three class M4 2-10-4 high-speed freight locomotives. An order has also been given by the Burlington to the Timken Company for bearings and boxes to equip the leading engine trucks of four of its class B-1-A locomotives. The work will be done in the shops of the railroad. This makes a total of 35 Timken-equipped engine trucks on this road. The E. G. Budd Manufacturing Company placed an order with the Timken Company for bearings and boxes for all axles of the Burlington's Mark Twain Zephyr.

Construction

ATCHISON, TOPEKA & SANTA FE.—This company and the Alton have been authorized by the Interstate Commerce Commission to construct a line from a connection with their main lines near Pequot station, Ill., westerly to a connection with the Elgin, Joliet & Eastern; to operate under trackage rights northerly over 0.74 mile of the E. J. & E.; and to construct a line westerly therefrom—a total distance of 5.5 miles, including the trackage rights. The tracks to be constructed will consist of 23,746 lineal feet of main track, 4,500 ft. of lead yard and 8 turnouts, and 3,000 ft. of passing track and 2 turnouts; estimated cost $134,822.

ALTON.—See Atchison, Topeka & Santa Fe.

BESSEMER & LAKE ERIE.—Work is being carried out by this company's forces replacing the present undergrade at Russelton, Pa., at a cost of about $85,000. See *Railway Age* May 18, page 782.

CHESAPEAKE & OHIO.—A contract has been given to Haley, Chisholm & Morris, Charlottesville, Va., for constructing coal storage pits at Newport News, Va., to cost about $75,000.

CHICAGO GREAT WESTERN.—A contract has been awarded to the Ross & White Company, Chicago, for the furnishing and installation of an N-&-W type electric cinder handling plant at St. Paul, Minn.

ELGIN, JOLIET AND EASTERN.—This company has placed an order with the Ross & White Company, Chicago, for equipment for installation in the railroad's existing coaling plant at Gary, Ind.

ERIE-LEHIGH VALLEY.—Detail plans, specifications and an estimate of cost of $284,703, exclusive of land and property damages, submitted by the Buffalo Grade Crossing and Terminal Station Commission, in connection with the elimination of the William street and South Ogden street crossings of the Erie and the Lehigh Valley in the city of Buffalo, N. Y., the town of Cheektowaga and the village of Sloan, have been approved by the New York Public Service Commission.

SEABOARD AIR LINE.—A contract has been given to C. V. York & Sons, Raleigh, N. C., for the construction of two brick produce buildings at Bay street, Jacksonville, Fla. One building will be two stories high, 90 ft. by 111 ft., and the other a one-story building and basement, 90 ft. by 148 ft. 6 in.

Financial

ATCHISON, TOPEKA & SANTA FE.—*Dividend.*—The directors of this company have declared a dividend of $2 a share on its common stock. The last payment made was in September of last year, the disbursement then being likewise $2.

CENTRAL OF NEW JERSEY.—*Bonds.*—The Interstate Commerce Commission has authorized this company to pledge $1,047,000 of its general mortgage 5 per cent bonds as collateral security for notes which it may issue under Section 20a (9) of the Interstate Commerce Act.

CENTRAL OF NEW JERSEY.—*Bond Maturity Extended.*—The Interstate Commerce Commission has extended until March 1, 1938, the maturity date of $1,000,000 of a $1,250,000 bond, matured March 1 last, of this company, as co-maker with the Edroyal Corporation. The interest rate on the unpaid balance has been reduced from 5 per cent to 4¼ per cent.

CHESAPEAKE & OHIO.—*Abandonment.*—This company and the Nelson & Albemarle have applied to the Interstate Commerce Commission for authority to abandon the branch line from Guthrie, Va., to Albemarle, 3.9 miles.

DALLES & SOUTHERN.—*Abandonment.*—This company has applied to the Interstate Commerce Commission for authority to abandon its line from The Dalles, Ore., to Friend, 41.79 miles.

ERIE.—*Bonds Called.*—A sinking fund call has been made by J. P. Morgan & Co., as sinking fund trustees for Erie Railroad 50-year 4 per cent Pennsylvania collateral gold bonds, dated February 1, 1901. A notice to holders points out that $760,000 principal amount of these bonds have been drawn by lot for redemption on August 1 at 105 and accrued interest.

LOUISVILLE & NASHVILLE.—*Abandonment.*—This company has applied to the Interstate Commerce Commission for authority to abandon operation under trackage rights over the line between Norton, Va., and Miller Yard, 17.5 miles.

MINERAL RANGE.—*Acquisition.*—The Interstate Commerce Commission has

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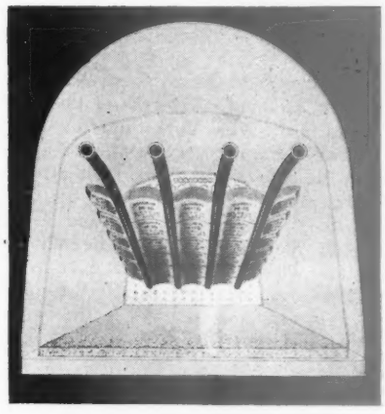

Every feature of the locomotive brick arch was developed by the American Arch Company.

American Arch Company Service Engineers are constantly alert to aid the railroads on any combustion problem.

They bring to their work lifetimes of experience in locomotive operation and fuel problems — experience that is nowhere else available.

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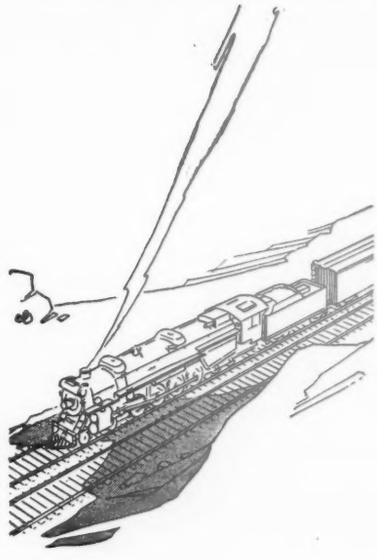

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authorized this company to acquire all the properties owned by the Hancock & Calumet extending from Hancock, Mich., to Lake Linden, with two short branch lines.

NORTHERN PACIFIC (et al).—*Abandonment.*—The Interstate Commerce Commission has authorized this company, the Great Northern, the Oregon-Washington and the Chicago, Milwaukee, St. Paul & Pacific to abandon their jointly-owned line extending southerly along the west side of the Cowlitz river, Wash., from Vader Junction to Longview, 19.4 miles. The Longview, Portland & Northern has been authorized to abandon operation under trackage rights over the line and the Milwaukee has been authorized to operate under trackage rights over the Northern Pacific on the East side of the Cowlitz river between Olequa and Longview Junction, 20.4 miles. The Longview, Portland & Northern has been authorized to operate under trackage rights over the Northern Pacific between Vader Junction and Longview Junction, 21.9 miles, and over a line owned jointly by the other carriers mentioned herein in Longview, 1 mile.

ST. LOUIS-SAN FRANCISCO.—*Suits on Stock Transactions.*—Trustees of this road have filed in the New York Supreme Court two suits for the recovery of alleged losses totaling $11,556,068, resulting from respective 1926 and 1930 acquisitions of Chicago, Rock Island & Pacific and Gulf, Mobile & Northern stock. The suit in connection with the Rock Island transaction seeks to recover $10,506,090 and names as defendants partners in the banking firms of James Speyer & Co. and J. & W. Seligman & Co. and Edward N. Brown, chairman of the 'Frisco board of directors. The other, based on the G. M. & N. transaction, seeks to recover $1,049,978 and names as defendants Mr. Brown and six partners of James Speyer & Co.

SAND SPRINGS.—*R. F. C. Loan.*—The Interstate Commerce Commission, finding that this road is not in need of financial reorganization, has approved conditionally the extension to July 1, 1937, of a $162,600 loan from the Reconstruction Finance Corporation which matures on July 8.

TENNESSEE CENTRAL.—*R. F. C. Loan Application Withdrawn.*—This road has withdrawn its application to the Interstate Commerce Commission for approval of a loan of $500,000 from the Reconstruction Finance Corporation.

WHEELING & LAKE ERIE.—*Bonds.*—The Interstate Commerce Commission has authorized this company to issue $8,130,000 of refunding mortgage 4 per cent series D bonds to be exchanged or sold in connection with the retirement of a like amount of 4½ series A and 5 per cent series B bonds. The issue will mature in 1966, and a sinking fund is provided for.

Average Prices of Stocks and of Bonds

	July 2	Last week	Last year
Average price of 20 representative railway stocks..	33.47	33.91	41.51
Average price of 20 representative railway bonds..	75.33	76.06	77.78

Railway Officers

OPERATING

E. V. Brogan, division superintendent of the Erie division of the New York Central at Erie, Pa., has retired from active duty after continuous service of more than 51 years. **J. R. Todd,** division superintendent at Youngstown, Ohio, has been appointed superintendent of the Erie division, with headquarters at Erie, Pa., succeeding Mr. Brogan. The Erie division will hereafter include the Youngstown terminal of this company. **L. A. Brown** has been appointed assistant superintendent of the Erie division at Erie, succeeding **Frederick Grundler,** transferred.

W. F. Kirk, eastern regional director on the staff of the federal co-ordinator of transportation, with headquarters at New York, who has returned to the Missouri Pacific as assistant general manager, with

W. F. Kirk

headquarters at St. Louis, Mo., was born on August 19, 1881, at Osage City, Kan. He entered railway service in November, 1897, as a messenger on the Atchison, Topeka and Santa Fe, later serving as a trackman on this road. From November, 1899, to February, 1900, he was with the Wells-Fargo Express Company as a messenger, then going with the Pecos Valley (now part of the A. T. & S. F.) as a telegrapher. Later in the same year he was advanced to dispatcher and after a short period in this position he accepted a similar position on the Michigan Central. In April, 1901, Mr. Kirk entered the service of the Missouri Pacific as a telegrapher and was advanced successively through the positions of dispatcher, chief dispatcher, trainmaster, assistant superintendent and assistant to the general superintendent of transportation. In December, 1917, he was appointed acting superintendent of the Wichita division and in the following year he was made superintendent of the Central division, later being transferred to the Omaha division. In June, 1924, he was further advanced to general superintendent of the Western Lines, with headquarters at Kansas City, Mo., which position he held until 1934, when he was appointed to the staff of the federal co-ordinator of transportation.

TRAFFIC

R. M. Hitshew, division freight agent for the Atchison, Topeka & Santa Fe, at Chicago has been appointed general freight agent with headquarters at the same point, succeeding **T. J. Hughes,** deceased.

James F. Mead, assistant freight traffic manager for the Atlantic Coast Line, with headquarters at Jacksonville, Fla., has been appointed general agent at New Orleans, La.

F. L. Glover, assistant to vice-president in charge of traffic of the Atlantic Coast Line, with headquarters at Wilmington, N. C., has been appointed assistant freight traffic manager, with the same headquarters.

At a meeting of the board of directors of the Atlantic Coast Line on June 20 **R. J. Doss,** assistant freight traffic manager at Wilmington, N. C., was elected freight traffic manager, with the same headquarters, and **M. H. Dorsett,** also assistant freight traffic manager at Wilmington, was elected freight traffic manager, with headquarters at Jacksonville, Fla. These elections became effective July 1.

Ralph C. Kerr, manager of the industrial department of the Chicago & North Western, has been appointed assistant freight traffic manager, to succeed **David H. Hoops,** deceased. Mr. Kerr has been in the employ of the North Western since 1899, when he entered the service as a clerk in the ticket auditor's office in Chicago. He worked as clerk and telegrapher in Pecatonica, Ill., Winnebago, Freeport and Belvidere until 1909, when he became traveling auditor on various divisions of the road. From 1917 until 1924, he was located at Milwaukee, Wis., first as freight agent in charge of terminals and then as general agent in the freight department. From 1925 to 1927, he was division freight

Ralph C. Kerr

and passenger agent at Green Bay, Wis., and from 1927 to 1929 was assistant general freight agent at Chicago. In the latter year he was made manager of the industrial department, which position he

Continued on next left-hand page

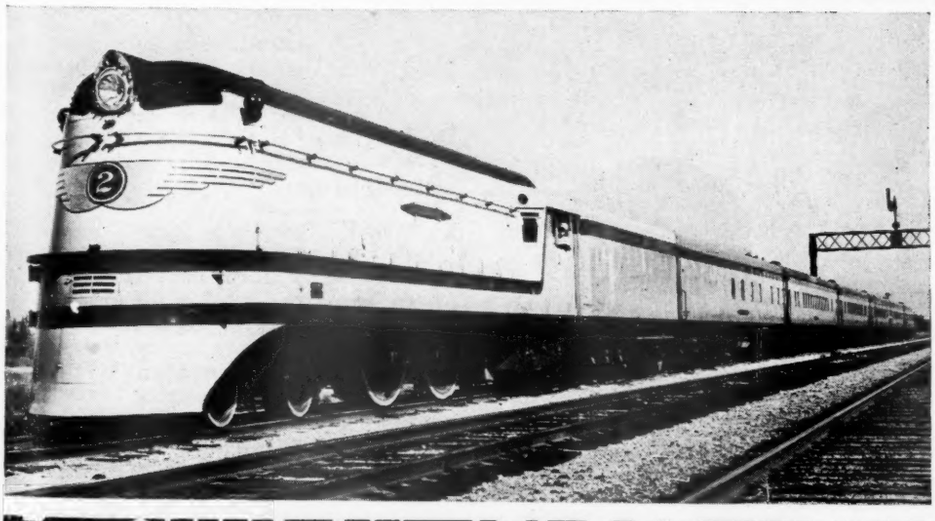
RAILROADING

The new Milwaukee high-speed passenger train, "Hiawatha" was placed in regular service May 29th.

MILES		NORTHBOUND			SOUTHBOUND	
0	Lv.	Chicago, Un. Sta.	1:00 P.M.	Lv.	Minneapolis	12:30 P.M.
85.0	Ar.	Milwaukee	2:15 P.M.	Lv.	St. Paul	1:00 P.M.
177.9	Ar.	Portage	3:41 P.M.	Ar.	Winona	2:45 P.M.
221.0	Ar.	New Lisbon	4:18 P.M.	Ar.	LaCrosse	3:14 P.M.
280.8	Ar.	LaCrosse	5:11 P.M.	Ar.	New Lisbon	4:11 P.M.
307.5	Ar.	Winona	5:45 P.M.	Ar.	Portage	4:46 P.M.
409.9	Ar.	St. Paul	7:30 P.M.	Ar.	Milwaukee	6:10 P.M.
420.8	Ar.	Minneapolis	8:00 P.M.	Ar.	Chicago, Un. Sta.	7:30 P.M.

Train consists of six sturdy, air conditioned, quiet, smooth-riding parlor cars, coaches and restaurant-buffet having a seating capacity exclusive of the dining car of 265. The cars are one-third lighter in weight than conventional cars. . . Starting June 15th an extra car was added to this train. Also an extra stop is now made at Red Wing. And the locomotive is still handling the train with ease and having no difficulty making schedule time. . . This is true railroading as we have always known it.

AMERICAN LOCOMOTIVE COMPANY



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ALCO

has held until his recent promotion. In his new position he will have supervision over all traffic in the Chicago district; over sand, gravel, crushed stone and cement over the entire railroad; and will retain general supervision of the industrial department.

Paul T. Wilson, division freight and passenger agent on the Chicago, Milwaukee, St. Paul & Pacific, with headquarters at Tacoma, Wash., has been appointed assistant general freight agent, with headquarters at Seattle, Wash., succeeding **Harry Rowe,** who, at his own request, has been transferred to Tacoma.

Joseph A. Farmar, assistant freight traffic manager of the Chicago, Milwaukee, St. Paul & Pacific, with headquarters at Chicago, Ill., has been elected chairman of the Trans-Continental Freight Bureau, succeeding **H. G. Toll,** who, because of ill health and at his own request, has been assigned to other duties. Mr. Farmar

Joseph A. Farmar

will have offices in the Chicago Union Station. He was born at Chicago and entered railway service with the Milwaukee Road in 1906 as an office boy. Mr. Farmar held various clerical positions in the general freight department until 1920, when he was promoted to chief of the tariff bureau. Subsequently he was appointed assistant general freight agent and in 1927, he was further advanced to assistant freight traffic manager, which position he was holding at the time of his recent appointment.

ENGINEERING AND SIGNALING

F. W. Gilcreast, engineer maintenance of way of the Lehigh & New England, with headquarters at Bethlehem, Pa., has been appointed consulting engineer. **W. O. Dennis,** inspector maintenance of way, with headquarters at Bethlehem, has been appointed engineer maintenance of way, with the same headquarters, succeeding Mr. Gilcreast. The position of inspector maintenance of way has been abolished.

Arthur Daniels, division engineer of the Twin City Terminals and the Iowa & Southern Minnesota divisions of the Chicago, Milwaukee, St. Paul & Pacific, with headquarters at Minneapolis, Minn., has been appointed to the newly-created position of assistant superintendent track maintenance, with headquarters at Chicago. **D. C. Rhynsburger,** assistant engineer with headquarters at Butte, Mont., has been promoted to division engineer of the Montana division, with the same headquarters, succeeding **W. F. McDonald,** who has been transferred to the La Crosse-River division, with headquarters at La Crosse, Wis., where he succeeds **W. H. Vosburg, E. W. Bolmgren,** assistant engineer, with headquarters at Minneapolis, Minn., has been promoted to division engineer of the Twin City Terminals and the Iowa & Southern Minnesota divisions, to succeed Mr. Daniels. **R. A. Whiteford,** assistant engineer, with headquarters at Savanna, Ill., has been promoted to division engineer of the Kansas City division, with headquarters at Ottumwa, Iowa. **E. H. Johnson,** division engineer of the Dubuque-Illinois division and the Kansas City division, with headquarters at Savanna, will retain jurisdiction over the Dubuque-Illinois division.

ELECTRICAL

J. V. B. Duer, electrical engineer for the Pennsylvania, with headquarters at Philadelphia, Pa., has been promoted to chief electrical engineer. **H. C. Griffith,** assistant electrical engineer at Philadelphia, has been appointed electrical engineer, succeeding Mr. Duer. Mr. Duer was born in Poultney, Vt., in 1882 and was educated at Stevens Preparatory School and the Stevens Institute of Technology, from the latter of which he was graduated in 1903. After taking the apprenticeship course of the General Electric Company at Lynn, Mass., and Schenectady, N. Y., specializing in railway work, Mr. Duer in 1905 became associated with the engineering firm which was retained in connection with the electrifying of the Long Island's eastern lines. The following year he entered the service of the Long Island as inspector and

J. V. B. Duer

in 1910 was transferred to the Pennsylvania, where he performed duties in connection with inaugurating electric operation into Pennsylvania station, New York City. In 1913 he was appointed assistant engineer in charge of electrical work east of Pittsburgh and Erie, and was promoted to electrical engineer in 1919. In 1920 his duties were extended to cover the entire Pennsylvania system. Mr. Duer was a delegate to the International Railway Congress in Italy in 1922, and in 1930 he was reporter for America to the International Congress on the subject of "Electric Locomotives for Main Line Traction." He is a Fellow of the American Institute of Electrical Engineers, and chairman of the Electrical section of the Association of American Railroads.

OBITUARY

C. B. Young, who retired in May, 1932, as consulting mechanical engineer for the Chicago, Burlington & Quincy, died in Chicago on July 1 as a result of a paralytic stroke.

Francis L. Marsh, special traffic agent of the Pennsylvania in charge of its New York produce terminal, died on June 27 at Flower Hospital in that city after a brief illness. Mr. Marsh was 69 years old.

Michael J. Powers, general passenger agent of the Delaware & Hudson, died of a heart attack on July 1 at Albany, N. Y. Mr. Powers was born on June 9, 1882, at Albany, N. Y., and entered railway service in 1900 as clerk in the office of the auditor of revenue of the Delaware & Hudson. He served as stenographer to chief clerk, office of the general passenger agent, until 1905, when he became stenographer to the assistant general passenger agent and was in charge of the ticket room and advertising department. From January, 1910, to January, 1915, Mr. Powers served as chief clerk in the passenger department, becoming, on the latter date, general passenger agent. From April, 1917, to February, 1919, Mr. Powers served as captain in the United States Army, assigned as assistant officer in charge of the transportation division at Hoboken, N. J. From February, 1919, to April, 1919, he was assistant general passenger agent for the Delaware & Hudson and in April, 1919, he became general passenger agent, the position he held until his death.

L. E. Temple, mechanical engineer of the International-Great Northern, with headquarters at Palestine, Tex., who died on June 21, as noted in the *Railway Age* of June 29, was born on December 4, 1899, and entered railway service on December 22, 1911, as a messenger for the Ft. Worth & Denver City at Childress, Texas. Two years later Mr. Temple became a draftsman apprentice with the same road, and on August 1, 1918, he was made a draftsman. On January 28, 1919, he went with the International-Great Northern as chief draftsman, with headquarters at Palestine, holding this position until August 1, 1920, when he re-entered the service of the Ft. Worth & Denver City as a draftsman at Childress. After a short time in the latter position he entered the service of the Baldwin Locomotive Works, Philadelphia, Pa., as detail engineer, leaving this company in 1921 to return to the International-Great Northern as assistant mechanical engineer. On May 8, 1922, Mr. Temple was promoted to mechanical engineer, which position he continued to hold until his death.